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08 Exploding Batteries

Have sales of the Samsung phones been booming? Perhaps, but they've been going boom as well, thanks to batteries overheating and exploding. Now a major recall of its Note 7 model is underway in the US, and the industry is faced with some tough choices when it comes to battery technology. David Crookes has been looking at what happened, and what the answer to the problem might be

18 Dodgy SD Cards

Bought yourself a bargain micro-SD card? Well, it might not be a bargain at all. In fact, it might be a fake. If that's the case, it's probably of a lower quality than you expected, meaning it'll be slower than the real thing or might not even offer as much capacity as it promises. How can you spot a fake, though, before you make a purchase. We've been finding out

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One day you're top of the world, flying high; the next day you're BlackBerry. It's not just the company formerly known as RIM that's managed to go from superstar to propping up the bar, plenty of companies have reversed their fortunes the other way too, becoming major players after struggling for years. Mark Pickavance picks out some notable examples

50 5.1 Speaker Sets

A decent set of stereo speakers or a soundbar is perfectly sufficient for many PC users, but if you're a gamer or a movie buff, then a surround set could be what you need. We've been looking at six 5.1 speaker sets this week, and seeing (or, rather, hearing) what they have to offer



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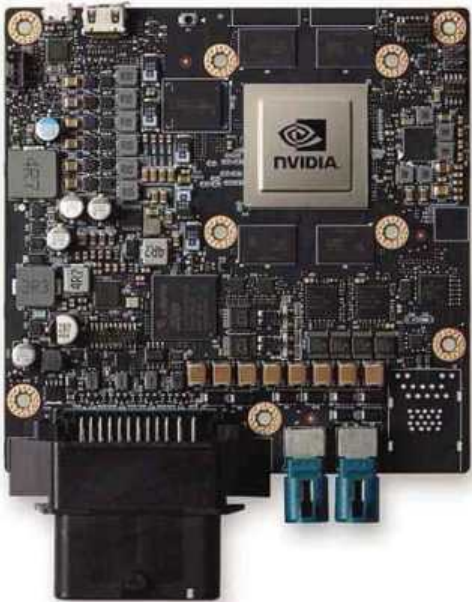


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The web, for all its wonderful parts, is also the perfect conduit for hate-mongers and trolls. Whether it's Facebook, Twitter or something else, it's far too easy to hurl abuse at people, while hiding your own identity. But social networks are trying to fight back. The question is, though, do they really stand any chance of succeeding?

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Like every other version of Windows, the latest one can be customised in a number of ways. Indeed, it's probably these things that really make your computer feel like your computer. Roland Waddilove explains ten great ways to customise Windows 10's Anniversary update



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Why Are Mobile Phones Blowing Up?

(And Is Your Technology Safe?)

Samsung's Galaxy Note 7s have burst into flames on numerous occasions but what is causing the problem and how widespread is it?



▲ *This Galaxy Note 7 had exploded while in the hands of a six-year-old child from Brooklyn, New York*

As black smoke billowed deep into the sky and flames engulfed the interior of a car sitting on the driveway of a suburban home, you could only imagine what the local curtain twitchers were making of the drama on their street in Florida. A terrorist attack, perhaps? Maybe vandals or simply a fault with the vehicle's electrics.

No one in their wildest dreams could have truly guessed the real culprit: Samsung's Galaxy Note 7 mobile phone, which had been left charging inside the Jeep. It had exploded a number of times, igniting the interior of the vehicle and enveloping it in flames. The owner, Nathan Donacher, had only just bought the phone that weekend, and when firefighters put out the blaze, it was still attached to its charging cable, but it was very much char-grilled.

Over in Brooklyn, New York, the situation was even worse. A six-year-old boy was playing with the same model of handset when it began to overheat. Suddenly, it exploded, burning the child's hands and setting off the smoke alarms in the house. Sadly, these incidents were not isolated.

In a cafe in Witham, Essex, a teacher said her Galaxy Note 7 began to overheat even though it wasn't being charged. "It suddenly expanded in my hand and got really, really hot," she told *The Sun*. "I dropped it on the table. Within a few seconds, there was smoke everywhere, and I jumped out of the way. The whole thing was just barbecued." Thousands of miles away in Perth, Australia, a similar story was being heard. A man was getting some much needed kip in his hotel room when his Galaxy Note 7 exploded there too. It caused more than A\$1,800 worth of damage to the room. Who knows what happened to his pants.

This has been highly embarrassing for Samsung, which had – at the end of August worldwide and the start of September in the UK – been enjoying very positive reviews of the new

Are Batteries Reaching Their Limit?

Donald Sadoway is the John F Elliot Professor of Materials Chemistry at the Massachusetts Institute of Technology and a noted expert on batteries. He took time away from his work to speak to us.

Micro Mart: Why are batteries exploding in phones, and is this the same problem that has affected other technology?

Donald Sadoway: There must be some manufacturing defect that is plaguing this particular line of phones from Samsung – something awry in the assembly (a new procedure or new equipment) or perhaps shoddy components from one of the suppliers.

MM: What advances in battery technology are needed in order to prevent this from happening?

DS: There are two paths. The first is an improvement to existing lithium-ion technology, and the second goes beyond lithium-ion and looks at a totally new chemistry.

MM: Does flawed technology have any telltale signs that there may be a problem?

DS: There is a difference between a flawed technology and a failed executing of a viable technology. Lithium-ion can be made safe but requires painstaking attention to detail. Attempts to reduce costs by taking shortcuts can lead to failures.

MM: Are there certain dos and don'ts people should follow when charging their phones?

DS: These are two practices I observe: I disconnect the phone when it is fully charged, and I never speak on the phone while it is connected to the charger.





▲ *The Samsung Galaxy Note 7 had been well received by critics and it has sold 2.5 million units*

handset. With its 5.7" curved display, cutting-edge camera, S-pen functionality and IP68 water-resistance rating, the phone was seen as one of the best on the market. It was declared a triumph and something to celebrate. Yet – boom – those hopes were destroyed in a series of instances and incidents.

It didn't take long to discover what was going wrong. Within days, Samsung said its investigation had concluded that the batteries of the exploding handsets were to blame. It immediately delayed shipments in South Korea so it could carry out further quality control testing, eventually finding that the problem appeared to surface when the batteries of the large phones were being charged. Within a week, Samsung was looking to replace the 2.5 million units believed to be affected, but still the problems rumbled on.

"Our number one priority is the safety of our customers. We are asking users to power down their Galaxy Note7s and exchange them as soon as possible," said DJ Koh, president of Samsung's Mobile Communications Business. "We are expediting replacement devices so that they can be provided through the exchange program as conveniently as possible and in compliance with related regulations. We sincerely thank our customers for their understanding and patience."

Recalls are never easy for companies. Although the physical act of replacing one handset with another or honouring requested refunds is straightforward enough, recalls dent consumer confidence, and they leave firms out of pocket. Samsung stresses that the number of reported incidents has been small, but the initial recall came after 35 explosions, and there have been others since.

The big problem faced by Samsung is ensuring that all of the recalled units are handed in but it also appears that the company may deactivate the affected phones after 30 September whether or not owners send them back. Samsung appears to contradict this claim, which surfaced on Reddit, but it would make perfect sense. There's no telling how many more phones will suddenly go kaboom.

Wider Extent

How did Samsung get to this point? Well, it's worth remembering that the company is not alone in suffering such problems. Lithium metal batteries became commercially available in the 1970s, and it was clear from the start that

“ It was still attached to its charging cable, but it was very much char-grilled ”

there were potential safety risks associated with them. A pack of lithium batteries had to be recalled in 1991 when hot gases were released and burned a man's face, and it was for such reasons that attention moved to non-metallic lithium batteries using lithium ions – a technology that was seen to be safer.

Able to store more energy in less space than other types of rechargeable battery, the lithium ion batteries retained their capacity when they were recharged before they were fully depleted. Sony introduced them commercially in 1991, and billions have been produced since. They allowed Sony to offer sleeker camcorders, doing away with the bulky batteries that used to plague handheld video cameras, but they have also come to be used in scores of other devices.

How To Spot And Prevent Battery Problems

Professor Clare Grey is an award-winning Royal Society fellow, and she has been working on the basic science behind lithium air-batteries. But what should we be doing to protect ourselves and our phones from horrendous battery booms? Prof. Grey gives us some tips.

1. It's not always practical, but look for signs of bulging of the battery or signs of excessive heating such as a warming up of the phone.
2. If the phone is overheating, bulging or hissing, it means there is leaking gas, so stop charging, and move it outside and certainly off a combustible surface.
3. If you have a new phone and you're worried, don't leave it to charge unattended. Keep an eye on it.
4. In particular, pay attention to the last 50% of charging; the higher the state of charge, the more reactive the various components.
5. Don't charge it for the first time on a plane, from your laptop.
6. Although less likely with phones, make sure you use the right charger.



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▲ A still from a YouTube video shows a hoverboard containing a lithium ion battery on fire

Over the years, the drive to discover better lithium-ion configurations that pack even more energy into a smaller space has become of vital importance, especially now that we're using ever more powerful devices on the go. But while these batteries are deemed to be safe (the number of incidents has been low compared the billions of batteries in circulation), that's not to say there haven't been incidents.

Dell, Sony and IBM are among the companies that have



▲ Professor Clare Grey

recalled lithium ion batteries in the past, and Apple has also suffered from swollen laptop batteries that suddenly go bang. Explosions have even affected the iPhone, although the company said incidents in France in 2009 were due to an "external force" (every handset affected had a broken screen) rather than the battery overheating. Yet on 2nd August 2016, the BBC website reported an Australian man's nasty-looking burn

when his iPhone 6 caught fire as he fell off his bike, and he blamed it on the battery.

It's not just computers and phones, though. Hoverboards containing lithium ion batteries were seen to destroy bedrooms and homes. "These things have batteries in them, which can overheat and catch fire, and we've seen that happen in the county already," James Whiddett, operations manager for Kent County Council's Trading Standards, told the Mail Online last year. The problem is that lithium ion batteries, which are also in cameras, handheld games consoles and many other consumer products, provide significant levels of power, but if they short circuit, they can produce a substantial amount of heat.

"A short circuit causes rapid heating, which is known as thermal runaway," energy storage expert Professor Clare Grey from Cambridge University told Micro Mart, of the process

Is Your Samsung Phone A Ticking Bomb?

Samsung has taken steps to help you work out if your handset is going to likely to explode. It has placed a tiny black square on the barcode label of the phone along with a blue letter 'S'. The presence of these will tell you that your phone is safe. It has also invited customers to contact the company with their IMEI number, allowing them to check it against the database of problematic handsets.



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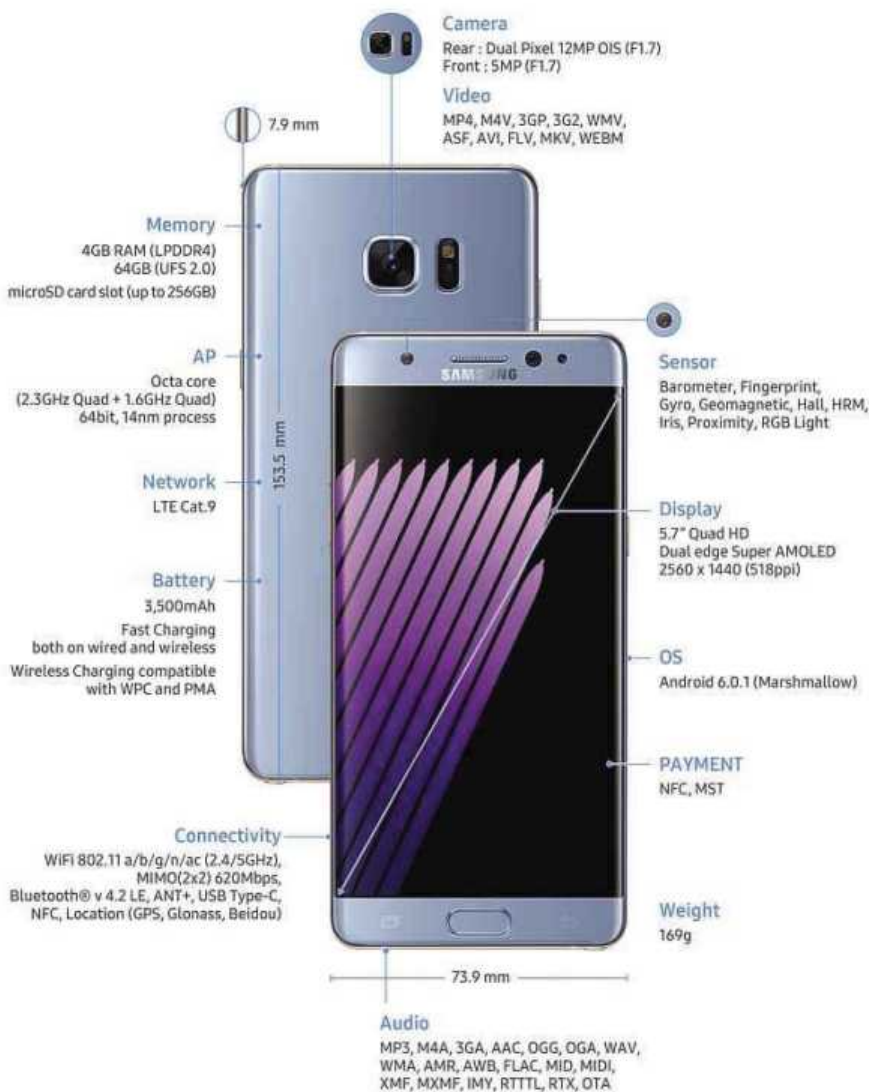
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Look At What You Could Have Had

The Galaxy Note 7 is an impressive phone. Dubbed a phablet because its 5.7" screen pushes it into the middle ground between a phone and a tablet, it has a sleek design with a dual-edge screen, a dual-pixel 12MP camera, an octa-core processor and 4GB of RAM and 64GB of storage. But it's the 3,500mAh battery that most people will be looking keenly at, given that it has become the focal point of the handset.

that causes temperatures to escalate to very high levels. "This causes a melting of the separator, which produces even faster heating and results in a loss of oxygen from the cathode – the positive electrode. There is a reaction between oxygen and the organic electrolyte and this causes an explosion."

In the wake of the Samsung incidents, a number of airlines have been verbally warning travellers to power off their Galaxy Note 7 phones and stow them. Frightened of a major incident at 20,000 feet, they're also being told they cannot charge the devices. The Federal Aviation Administration (FAA) has firmly backed such calls. "In light of recent incidents and concerns raised by Samsung about its Galaxy Note 7 devices, the Federal Aviation Administration strongly advises passengers not to turn on or charge these devices on board aircraft and not to stow them in any checked baggage," it said in a statement on its website. Pakistan International Airline doesn't even want the phone on its plane at all.

And yet some of the planes themselves have suffered problems with lithium ion batteries. In its first year of service, at least four Boeing 787 Dreamliners suffered from electrical system problems stemming from their use. In 2013, a battery started a fire in an empty 787 operated by Japan Airlines, and following further incidents, fleets of 787s ended up being

grounded and flights suspended. The planes have since been allowed back into service thanks to new systems that can better contain battery fires, but it served as a reminder of how dangerous the batteries can be.

"The source of the short circuits is likely different with these different incidents, but the driving force for the fires and explosions is the same," Prof. Grey continues. In the case of the Galaxy Note 7s, the batteries are catching fire when they're being charged. "It hints at a difference from fires that have happened when charged batteries have caught fire just sitting there."

But why is this happening? "I can speculate, if you wish." Prof. Grey continues. "Earlier laptop fires were likely caused by small bits of metal entering during the manufacturing process, possibly while sealing the metal cans. There could be holes in the separator or a short circuit caused by a hole, or problems in manufacturing. Lithium ion dendrites (thin Li metal fibre) can form on charging and cause short circuits. There may be some local heating on charging, causing oxygen loss."

Running Low

Despite all this, lithium batteries remain popular among manufacturers. They weigh less and allow for a greater source



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of energy in a smaller amount of space than rival batteries. Yet the possibility that something can go so seriously wrong is shocking for the wider public who, quite rightly, expect their technology to be absolutely safe to use.

It, therefore, came as no surprise that shares in Samsung – the world’s largest manufacturer of smartphones – fell by 7% on 12 September, a situation that wasn’t helped by Apple’s announcement of its new iPhone 7 and 7S. With \$25 billion wiped off the market value of Samsung since the problem emerged, the company has some serious PR to do to regain consumer confidence. The smart money is on it bouncing back and the problems eventually being forgotten, but is there anything it should be doing right now?

According to Prof. Grey, the technology industry should be seriously considering alternatives but, as she accepts, even that won’t entirely eliminate all the shortcomings. “There are cathode materials out there such as LiFePO₄, which are safer and less prone to oxygen loss, but consumers would have to accept a battery with a lower energy density. It just won’t last as long.”

“ \$25 billion has been wiped off Samsung’s market value ”

In a mobile sector that is under pressure to deliver longer-lasting batteries, that would be seen as a retrograde step. This is an era when Apple’s Phil Schiller is able to go on stage and announce that anyone upgrading from an iPhone 6S to an iPhone 7 will enjoy an extra hour of battery life and get an applause for such progress. Sure, this is welcome, given the greater power of the new handsets, but the times under discussion, while always welcome, are still small advances in real times.

“Manufacturing has got much better, and there are fewer flaws and recalls, but it’s still a challenge,” adds Grey. “There is work in research labs in universities and companies to replace the organic electrolyte with less flammable liquids called electrolytes or completely by a ceramic. Again, compromises may be required, as the batteries may be slower to charge, basically because Li ions move more slowly in these electrolytes.”

There’s also work being carried out on self-healing separators. “That is, separators that may close holes that form, or shut down the battery once the battery starts to heat up because of a short circuit,” Grey explains. “It all adds to the cost of the battery, but the battery is a smaller fraction of the cost of a smartphone than it was for an earlier mobile phone, so perhaps it’s time to tolerate extra cost for safety?”

Next Steps

So what should you be doing? The first thing is not to panic. If you own a Samsung Galaxy Note 7, then you’ll be contacted by your provider or operator, if you haven’t already. You’ll be asked to hand the phone back until a replacement is sorted for you. Samsung also says you can contact its customer service team on 0330 726 1000 with any questions or concerns.

Yet what of the rest of the industry and your other gadgets? Well, the current situation is still – despite the number of incidents – a relatively small problem in relation to the number of handsets in the world. Lithium ion batteries are also

regulated by the government and international organisations to ensure they’re as safe as they can be – again something that should continue to give you confidence.

In Samsung’s case, the problem affects just one current product line, and the company has stopped selling it, while asking customers to hand theirs in for a refund or a different model. The Galaxy Note 7 is also likely to be scrapped in its entirety to draw a line under the problem. This is something that is very much being brought under control, and yet there are still things you can do to protect yourself when it comes to any gadget. Professor Grey discusses some of these elsewhere on these pages.

In general, though, you shouldn’t leave a phone or any other gadget on charge for long periods of time without having it within your sight or checking on it. And you should be careful about using chargers that haven’t been supplied by the manufacturer of your device; there have been problems with third-party chargers in the past.

Ultimately, though, this incident with Samsung will have sent shockwaves through the industry, given the scale of the recall and the short-term impact it has had on the business. As a result, companies will be sure to take even more care than they already do to avoid future problems, and that should help make batteries safer than ever. [mm](#)

Other Recent Recalls

Samsung is not the only company to have recalled an electronic product due to faulty batteries. The US Consumer Product Safety Commission has reported around 50 recalls for defective lithium ion batteries since 2002, and a good number have occurred this year – mainly due to a problem with a batch of Panasonic batteries.

Panasonic CF-VZSU61U and CD-VZSU61R laptops:

Conductive foreign material was mixed into the battery cells during manufacturing, which was thought to pose a risk of fire. This affected products sold between December 2011 and August 2013, but the recall was issued in March 2016.

Toshiba laptops: Also in March 2016, it was found that Panasonic lithium-ion battery packs installed in 39 models of Toshiba Portege, Satellite and Tecra laptops, sold separately and used in repairs could potentially overheat and melt. It affected sales from June 2011 to January 2016.

Sony VAIO laptops: In June, Panasonic battery packs were again seen to overheat, posing burn and fire hazards in laptops bought between February 2013 and October 2013. The advice was to remove the laptops and power through the AC cord instead.

HP and Compaq laptops: Again in June 2016, Panasonic cells were said to be overheating, melting or charring, with four incidents understood to have caused \$4,000 worth of damage. It affected laptops bought between March 2013 and August 2015.

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How To Avoid Buying Fake And Poor-quality Memory Cards

How do you spot unofficial memory cards and avoid the models that'll likely be of lesser quality? We find out

Bootleggers have been around for a very long time and have plied their trade in many different markets. One of the most common places to find counterfeit products has always been media, with bootleg copies of movies, music and even video games. Often these products are very easy to spot, with obvious differences or notable style changes from the official product. However, some bootleggers are far better at duplicating the real McCoy than others and there have been many cases where a fake product has been all but impossible to identify in without some serious investigation.

These kind of fakes are easy to fall for, and millions of people do, happily buying these unofficial and illegal copies without knowing that what they're getting is usually an inferior product

– until they get home and find out the ugly truth. By this time, the seller is probably gone, never to return. Even if they're still present, they'll rarely, if ever, provide refunds and as you've willingly purchased a pirate or bootleg item, you've rarely got a legal leg to stand on. Well, this is the worry bootleggers and sellers bank on. In truth, you can always seek help, but that's not primarily what we're here for. We're here to look at a common problem facing PC and technology owners, and that's fake memory cards.

SD, XD, ODD

It's all too common for fake copies of official merchandise to be inferior to the real thing, be it a poor-quality movie or audio disc, nasty-smelling perfume or badly made clothing. The same applies to a commonly counterfeited product: the humble memory card. Used in so many of today's devices and gadgets, memory cards are indispensable for many users, especially photographers, who are arguably the primary users of the storage medium. They are, however, used in other heavily used devices, such as mobile phones, tablets and PCs/laptops, many of which come with built-in readers.



There have been many different formats of memory card over the years, which have reduced in physical size and grown in storage space as time and technology have allowed. The most popular of these is undoubtedly SD, which comes in various forms – primarily micro-SD, but there are some devices that use XD, although these are far less common.

Micro-SD is the most common form factor of cards these days, and this has its own subsets, including micro-SD, micro-SDHC and micro-SDXC. There are also additional forms of these, indicated by a I or II. This denotes Ultra High Speed Phase I (UHS-I) and Phase II (UHS-II) bus designs. Such cards have increased performance.

These all use the same physical card form (or use an adapter), but they're not the same in terms of compatibility and are not backwards compatible either. Indeed, the technical side of things is something you really need to understand when you're buying memory cards, because knowing this can greatly help you avoid falling foul of fakes. Let's have a look at some of the basics and get you armed with some useful information and tips to avoid the fakers.

Classes

We should first identify the basic specifications all cards have and should clearly have on their packaging, beginning with the most important: capacity.

All memory cards will clearly indicate the actual storage space of the card on both the packaging and the card itself.

Storage space varies depending on cost, but most cards these days will be 16GB and above. In fact, even cheap cards sold as post offices and the like will likely be 32 or 64GB at least.

The size of a card is important to note for more than just how much data you can store on it, though.

It can also be key to spotting fakes, because there are rules here that cloners don't always adhere to. Each format we've mentioned here can only handle so much storage. SD can hold 128MB to 2GB, SDHC can handle 4-32GB, and SDXC can deal with 64GB to 2TB.

Most fakes you'll find in the wild will be in the larger volumes, because this is where the most money is, and it's not uncommon for some dodgy cards so be sold as micro-SD cards that hold 64GB of data, for example. Since SD can only handle up to 2GB, there's your easy warning sign that something may be wrong. Likewise, it can also work the other way. If you see a SDXC card with only 32GB of space, you should steer clear.

We should also repeat the target of larger devices for fakes. Always be more on guard when buying large capacity cards, because there are far less smaller-capacity fakes. Both do exist, of course, but the more expensive cards are usually the target, and this is when you should always double-check what you're buying. It's a very important tip.

And, as we've also already stated, never forget that SD cards are not backwards compatible. An SDXC card

will not work in a device that can only support standard SD, even though the card itself may physically fit.

Finally, in terms of space, it's not uncommon for fake cards to report a certain storage size but actually possess less physical space. This means you could buy what appears to be a 64GB card but end up with one that only holds 32GB or even less.

Next, we have the speed rating. This is the class of the card that denotes the overall data transfer speed of the card – more specifically the minimum write speed possible for the class, and it's another area where you can often trip up a possible fake.

The classes are as follows:

Class	Minimum Speed
2	2MB/s
4	4MB/s
6	6MB/s
8	8MB/s
10	10MB/s

As you can see, it's fairly simple stuff, with the class basically corresponding to the minimum speed. There are also a couple of extra classes. These are UHS classes for the ultra high speed variants. These include class 1, which has a minimum speed of 10MB/s, and class 3, which has a minimum of 30MB/s.

There are two more speed ratings, but they're not always used. This depends on the manufacturer so won't apply to all models. The first of these is the maximum speed which, unsurprisingly, specifies the fastest speed a card can reach.

Another measurement than can be used is relative speed, which you may remember from CD writing when drives were tagged with X2, X10, X20 and so on. Some cards may have similar ratings, such as X100. This equals 1500KB/s, which is around 15MB/s.

These speed measurements are important to know, because a lot of fakes simply get these wrong, and it can highlight an unofficial product with ease. If you find a card by a company that doesn't ever use the maximum speed rating on its cards, you've probably found a fake.

It's very important to consider the quality of a card too. You can't really see this just by looking at the card, because it only really comes into play when in use. Many fake cards are simply



▲ A real Samsung 64GB SDXC I card



▲ A fake Samsung 64GB SDHC card



▲ Flea markets and other similar public sales gatherings are notorious places for people to sell fake goods

of very poor quality and don't perform anywhere near as well as the real thing. Fake cards can be slow, have less space than advertised and are often prone to errors and corruption. They're made on the cheap with inferior materials, sometimes in sweatshops, which add a whole extra layer of nastiness to proceedings, and they're generally just not reliable.

The Eyes Have It

As good as counterfeit cards can be, most fail a side-by-side visual test, and this can be the easiest way for anyone to tell the real thing from the fake, even if you know nothing about the technical specs and just need a card to slot into your digital camera.

One of the best ways to use this weakness in copies is to always have on hand a real card or at least a picture of

one. Either take a card you already have with you when out and about or use your phone to visit the official manufacturer website and find a decent image of the card in question.

Often, copies will have subtle differences, such as different colours or slightly different fonts, and some won't have the usual arrangement of icons and specifications listed on them. Some fakes even vary in physical size.

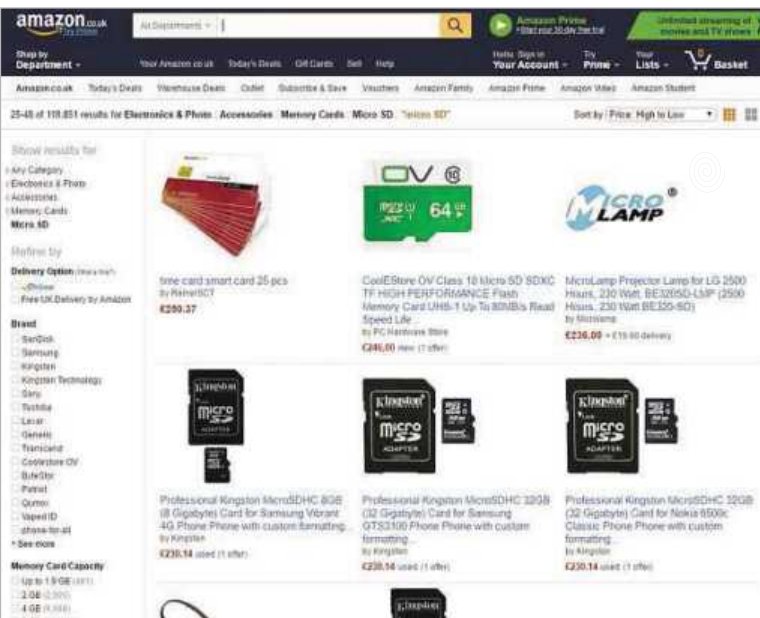
Keep your eyes open for the tips we've covered already too, such as the contrasting specifications and formats. These are part of the visual identification, and it all helps to ensure you're buying a genuine card.

Price Is Right?

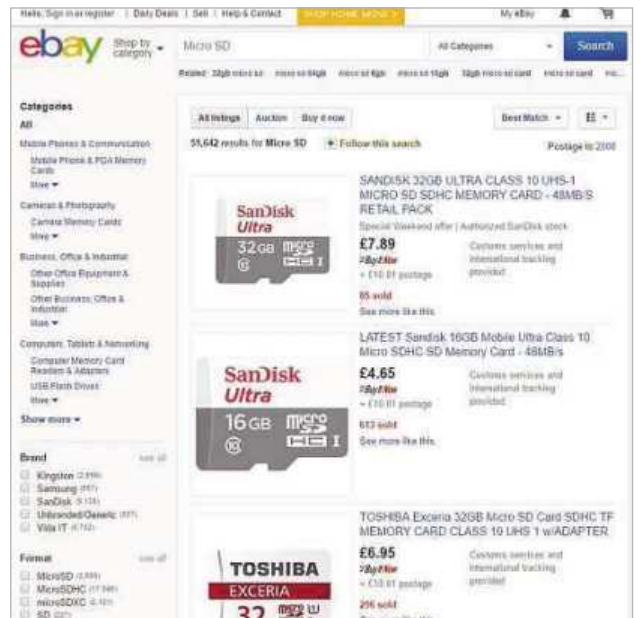
A major giveaway that can help you spot fakes is the price. It may be a cliché, but if something looks too good to be true,



it probably isn't true. Memory cards, although no longer all that expensive at lower sizes, do cost a certain amount of money to manufacture, and pricing them too low means very little profit or even a loss for the producer. While you may see some that are lower, the current average price we found for a 64GB micro-SD XC I card would be around £30-50 give or take. If you find a similar card for a fraction of the price, beware. Companies and outlets can only shave so much off a product before it starts to become a loss, so there's a limit of how low a product can go for (outside of fire sales, end-of-line bargains and the like). Obviously, seeing a 512GB memory card for £50



▲ Amazon is one of the most reputable sites online, but even it cannot escape some dubious offers



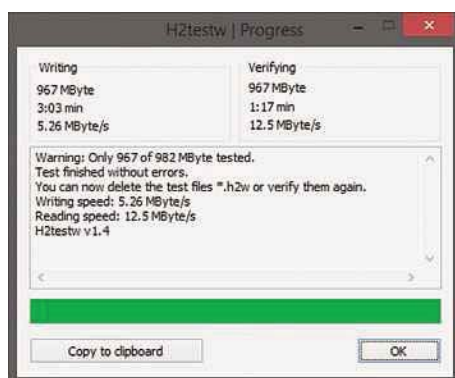
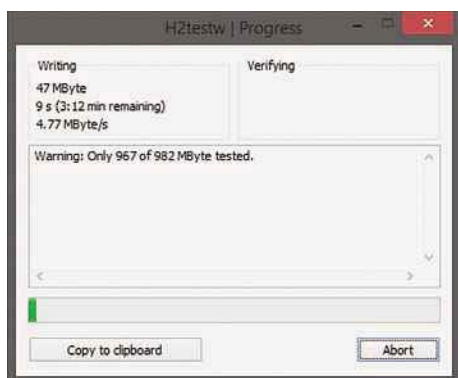
▲ eBay is hugely popular and is also a great place for counterfeit goods



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▲ H2testw is a useful tool for detecting fake memory cards and flash drives

when they still cost hundreds is something that's clearly not above board and should be avoided.

With memory cards, though, fakers don't always ply their trade by undercutting the official products and instead simply want to make money by fooling you into buying a fake, so the aforementioned tips are all valid, regardless of price.

That said, we're not saying all bargains of this type are dubious. Far from it. There are some fantastic offers where people are selling cards for a superb price, but there are also a lot of frauds, and you just need to be careful and take steps to protect yourself.

Online Awareness

Although small shops and flea markets are still a big source of fake goods, these days, a lot of people buy memory cards online. Due to the nature of online sales, lacking the same overheads the high street has, you can find much cheaper offers. Since you don't actually see the product before it lands on your doorstep, it makes it much easier for fakes to be sold, and there's always an element of risk unless you're shopping at a site you totally trust.

Be aware, however, that even sites like Amazon are not immune to this. Amazon has many sellers that simply sell through it but are not actually part of Amazon itself. There's more support here than most sites, however, thanks to Amazon's policies concerning third-party sellers, but there's still the chance you could be fooled. Sites like eBay are notorious for fake goods, such is the nature of the world's largest online auction site. Likewise, other auctions sites and overseas import sites are also a cause for concern.

There's no way to really guarantee the item you're getting online is the real thing, but there are some tricks you

can employ, with the first being to pay attention to what others have to say.

Although customer feedback isn't always to be taken as gospel (all it takes is one disgruntled buyer to sour an otherwise perfectly fine offer), it's still an essential tool. Always look at the feedback for memory cards (and any other product, for that matter), and see if people have had problems with quality, performance or failures. Some may even let others know that a product is a fake. One such post can be taken with a pinch of salt, but many similar posts should ring those alarms.

You should also try contacting the seller to ask for any proof of authenticity. This can be hard to do, and many sellers won't oblige, even reputable ones, but if you're worried, you're within your rights as a customer to ask. If you do ask and are sent an image, or you're looking at an image in the actual offer on the site, beware of low-quality, artefact-ridden shots. These are often simply grabbed from any source and can be a sign of trouble. They can also simply signify someone who took little care to advertise their perfectly genuine stock, but most will take decent photos, since it's in their best interests.

When buying a card online, it's always a good idea to research any returns policy ahead of time and get something in writing you can refer to if need be. This is easy with sites like Amazon, because you'll always have an email paper trail,

and Amazon has a good return policy already. The site will even get involved in third-party disputes. Not all sites do this, though, so always cover your back.

Taking A Risk

If you've decided to take the plunge anyway, regardless of the risk, and you've ended up with what you think may be a fake, what do you do? Aside from returning it, if you can, you can chalk it up as a learning experience, or you can actually use the card anyway.

This may sound like a silly thing to do, but even fake cards can be useful for some things, as long as they're reliable enough. Moving around data and taking the odd photo should be fine; just be aware of what you're storing. We'd certainly advise you never to use such cards for sensitive or essential data. Don't put that all-important work presentation on one, for example; you're just asking for trouble. Use them for non-essential, light tasks and they may be fine.

If you're not sure if your card is a fake and would like some closure, you could try the program H2testw (bit.ly/114FluJ). This is a really useful tool that can detect fake memory cards and flash drives, and it's been proven to work countless times. It's a very useful app and one that'll ensure you know the real source of your memory card.

Once it scans a volume, it'll let you know with various results that indicate a fake, often telling you that the media is defective, along with various test results for the scans it runs. It's available in German and English.

Stay Alert

As always with this kind of subject, tips and tricks only go so far, and your own vigilance and common sense will prevail over any potential rip-off. Use these tips and always make sure you buy from trusted sources, and you'll be fine. If you need to shop somewhere you haven't, use other people's feedback to your advantage and never jump in blind. [mm](#)



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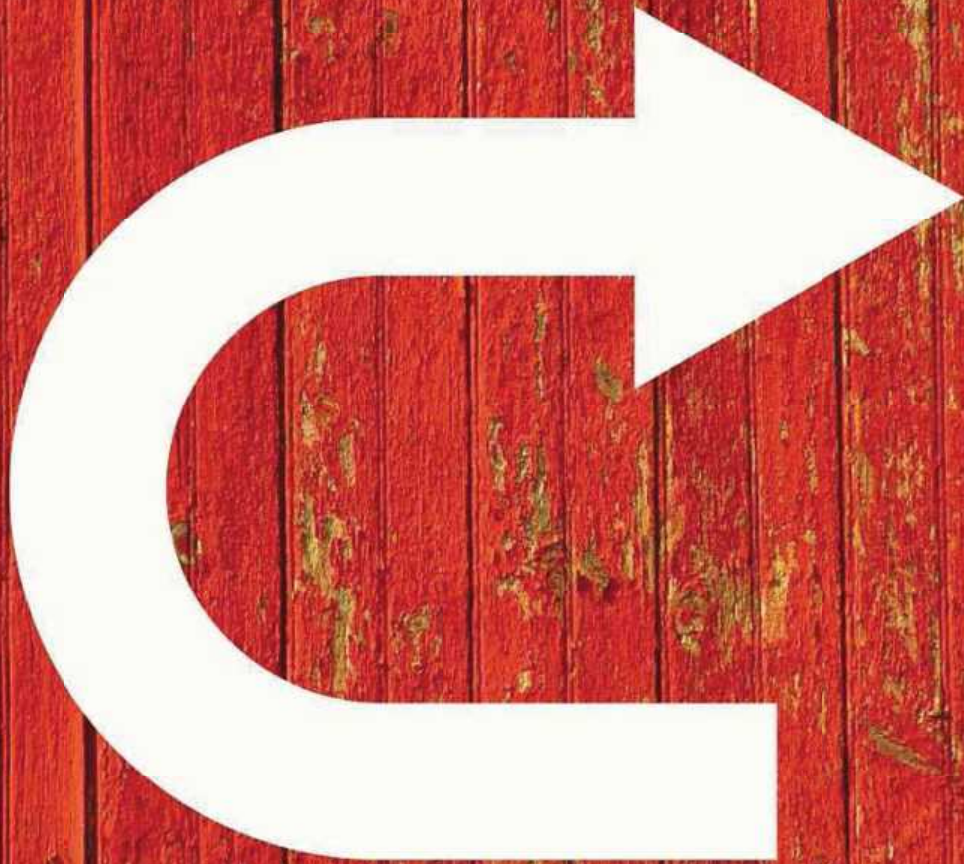
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Technology's Biggest Reversals Of Fortune

Mark Pickavance reveals the rag-to-riches-back-to-rags stories of the tech industry and those companies that drastically changed their fortunes for good or for bad

Having worked for a few big companies that no longer exist, even the most successful companies can get things badly wrong. What often destabilises them is changing market circumstances, but it can be not listening to their customers or making risky investments.

As business sectors go, the tech one is especially dangerous in this respect, as what seems like a world-leading technology one minute can be a footnote in history 30 seconds later. With the timescales for new product launches being shorter than ever, great products can also fail because of poor timing or even an economic downturn.

Here are some stories of companies that had everything or nothing and managed to reverse those fortunes by doing something generally unexpected.

Apple

These days, Apple is associated with huge success, often being presented as the most profitable company on the planet. But

the story of Apple isn't a linear one of starting in a garage and ending up dominating the smartphone market. No, many things happened in between.

How close Apple came to shutting its doors is one of those subjects it rarely talks about now, but it nearly happened when its ambitions to storm the PC market went very badly wrong.

Let's start with the mythos of Apple, in that it was started by Steve Jobs, Steve Wozniak and Ronald Wayne in 1976, and it made its first computer in a garage.

Amazingly, most of this true. The company operated out of Jobs's parents' home in Los Altos, California, where Steve Wozniak designed and handmade the Apple 1 kits for sale to the very earliest computer enthusiasts.

From those humble beginnings, within four years Apple had a production facility, a team of engineers to design new products and even sales people to promote them.

While the Apple II and its derivatives did well, it was the Macintosh that really made the company blossom in 1984 and beyond. Ironically, it wasn't specifically the Mac that was the real success, but the addition of the Apple Laserwriter and Aldus Pagemaker that made people accept the high cost and buy into the Apple Mac.

“ How close Apple came to shutting its doors is one of those subjects it rarely talks about now ”

However, while things on the sales front went well, inside Apple, a boardroom struggle developed between then-CEO John Sculley and Steve Jobs. Jobs tried to get rid of Sculley and failed, and then Sculley removed him from his duties and he resigned.

With Sculley in control, a series of disastrous decisions started to affect sales, not least to hike the prices above what was considered steep at the time. Simultaneously, PCs were getting more powerful and cheaper, undercutting the Apple product range often by 50% or more.

In 1989, things went from bad to worse. The stock value dropped, and Apple was forced to accept that expecting 55% profit on every Mac sold was unrealistic and was making its products increasingly niche. Apple responded with cheaper offerings, like the Mac Classic, and introduced the PowerBook in 1991.

With Microsoft Windows now available on the PC, and while the market for home computers was greater than ever, the share that Apple got didn't grow significantly. The failure of products like the Apple Newton and heavy investment in replacement hardware and a new operating system put the company into dire financial straits. In 1997, Apple flirted with bankruptcy.

Although this has been contested by some, two things really stopped Apple from going under. First, there was Steve Jobs's return, to be CEO. But also there was the deal he did with Microsoft, whereby it gave Apple \$150m for stock and also secured Office for the Mac.



▲ *The Mac Classic was one of the products that Apple launched in an attempt to turn around its desperate financial state*

From there, it dumped the failed 'Copland' Macintosh operating system and reworked Job's NeXTSTEP OS into what ultimately became Mac OS X.

With the computer side of the business looking healthy after the launch of the iMac, Jobs then started work on new projects like the iPod, iPhone and iPad. These would return billions to the company he started many decades previously.

Apple's story isn't over, and the post-Jobs era seems beset with more challenges for the company. But it's survived extinction once before, so it would be foolish to presume that the next downturn might finish it.

Atari

Ask anyone who plays games and is more than 40 years young, and they'll probably remember Atari and its nemesis, Commodore.

The origins of Atari go back to the very dawn of popular computing and the man who created the first truly interactive arcade computer game, Nolan Bushnell. Together with engineer Ted Dabney, they created *Computer Space*. Atari would subsequently build the tennis title *Pong*, and with that one title, the era of arcade games that weren't pinball began.

But arcade machines were only the beginning, because Bushnell really wanted to break into the home market, so he secretly developed the Atari Video Computer System (VCS).

Development started in earnest in 1976, and the console hit the market in September 1977. It had many of the classic features that defined games consoles for years to come. Those included cartridge ROM-based titles, dedicated controller input, battery-backed high score retention and TV output.

Even at \$199 (equivalent to more than \$800 today), Atari shipped more than 30 million of these between 1977 and when it finally stopped making them in 1992.

Long before this happened, Bushnell sold Atari to Warner Communications, and after a series of disagreements about the direction of the company, he left.

A successor to the VCS, now renamed the 2600, was developed, but while this was ongoing, Apple launched the Apple II, and the market for home computers started to radically alter. While dedicated games machines still sold, many wanted their systems to do more than just play games.

Atari's response was the 800 and 400 series machines that included a keyboard and the ability to run the Atari Basic programming language. With probably the very best graphics available on a home system at the time, Atari did incredibly well in the first few years of the 1980s. It gained notoriety as being the fastest growing US company ever at the time, and it represented roughly a third of all the revenue that Warner generated at the time.

But having soared very high, Atari and many others in the gaming market were in for a very rude shock in 1983, when the market for games consoles effectively collapsed.

The problem was a glut of competitors, all chasing the same customers and trying to undercut each other on price and deliver new hardware. With home computers also encroaching on the same space, Atari was one of the companies that felt the impact hardest. While in 1982, it made a huge profit, in 1983, it suffered a \$500 million loss.

With the company being tied to Warner's bottom line, it looked to offload Atari at the earliest opportunity, before its stock became totally worthless.

Ironically, at the same time this was going on, Atari was in negotiations to rebrand the Nintendo Famicom (NES), but it never happened, opening up the US market to the success of the NES and its replacement the SNES.

Warner did a deal with Jack Tramiel to take Atari's consumer electronics and home computer divisions, for which he paid \$240 million in promissory notes.

Under Tramiel, the Atari brand would have its second reversal of fortunes. In the first year (1984) he brought the company back into modest profit, merely by launching the Atari 2600jr and the Atari 7800 consoles, developed when Warner ran the firm.

From that point, Atari's star was rising once more, as many in the world of computing and gaming got excited at the



▲ Jack Tramiel and Michael Tomczyk celebrate selling the millionth Commodore VIC20. He'd set up Commodore Business Machines to make typewriters, left it and bought Atari from Warner Communications and then later sold it to a hard drive maker. He was a tough businessman that left a lasting impact on those he did business with. Steve Arnold of LucasArts once described the experience as like confronting Jabba the Hutt

prospect of the transition from the 16-bit console era to the 32-bit one, and the highly anticipated Atari ST.

When it did arrive in 1985, it sold well, especially in Europe, and Atari managed to ship some five million of them in the years that followed. It was ultimately replaced by the STE, the TT, MEGA STE and finally the Falcon.


However, the rise of the PC eventually saw off the Atari ST and its Commodore Amiga buddy, and the company ended up with a very bad reputation for shoddy build quality and very poor adherence to timescales that it itself had defined.

Failure to deliver both the Jaguar and Lynx consoles when it had originally promised saw it not grab sufficient market share, and it lost out to both Sega and Sony (with its fledgling PlayStation).

The end for the games console side of Atari came in 1996, when Tramiel merged with an unsuccessful drive-making subsidiary, JT Storage, and it eventually sold the name and assets to Hasbro for just \$5m.

Atari was a story of rags to riches, to rags, then back to riches, to oblivion. It wasn't really a failure of vision that killed it, but rather an inability to handle the sheer level of change, which the company itself had helped initiate.





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▲ John Fellows Akers, who was CEO of IBM when it posted the largest loss in American corporate history



▲ Lou Gestner came from American Express to save IBM and, for the most part, succeeded

IBM

When it first started out in 1911, IBM was known as the Computing-Tabulating-Recording Company. Indeed, it has a very long history that predates computers entirely.

It became International Business Machines in 1924, and its business was primarily built around the sort of clock punch devices that most factory workers used to clock in and out of work.

Punch cards led to filing systems and data organisation, and a worldwide organisation that was involved in all manner of office automation tools and techniques. Infamously, during World War II, its German subsidiary Dehomag provided a system that the Third Reich used to meticulously document

“ With the company being tied to Warner’s bottom line, it looked to offload Atari at the earliest opportunity, before its stock became totally worthless ”



the extermination of millions of those they didn’t consider to be worthy. Simultaneously, the American divisions of IBM were manufacturing small arms as their contribution to the Allied war effort.

After the war, it became involved in primitive computing, and with the IBM 704 in 1956, it demonstrated the first system designed to learn from its experiences.

This eventually led to the System/360 in 1964, a general purpose computing platform that was extensible, based on the growing needs of the companies that used them.

Its business for ‘big tin’ or mainframe and mini computers grew steadily as more companies realised the potential of business platforms, and computers shifted from being the exception to the norm.

The problem that IBM salespeople had by the end of the 70s was that investing in an IBM system was such a massive undertaking for most companies that it was difficult to get these commitments.

What it needed was a new first rung that would get companies on the road to bigger systems, and seeing what the likes of Tandy and Apple had done, it decided to build its own small computer.

Originally, it was to be called the IBM model number 5150, but thankfully someone in their marketing department rebranded it as the IBM Personal Computer or IBM PC, before it launched in August 1981.

It’s been well documented that many in IBM thought the PC was a bad idea, not least because its competitors Data General and Texas Instruments had built small systems and failed to sell many.

Because of this, the PC project, codenamed ‘Chess’, was given a relatively low priority – so low that within a few months of releasing the system, it still had no operating system for it.

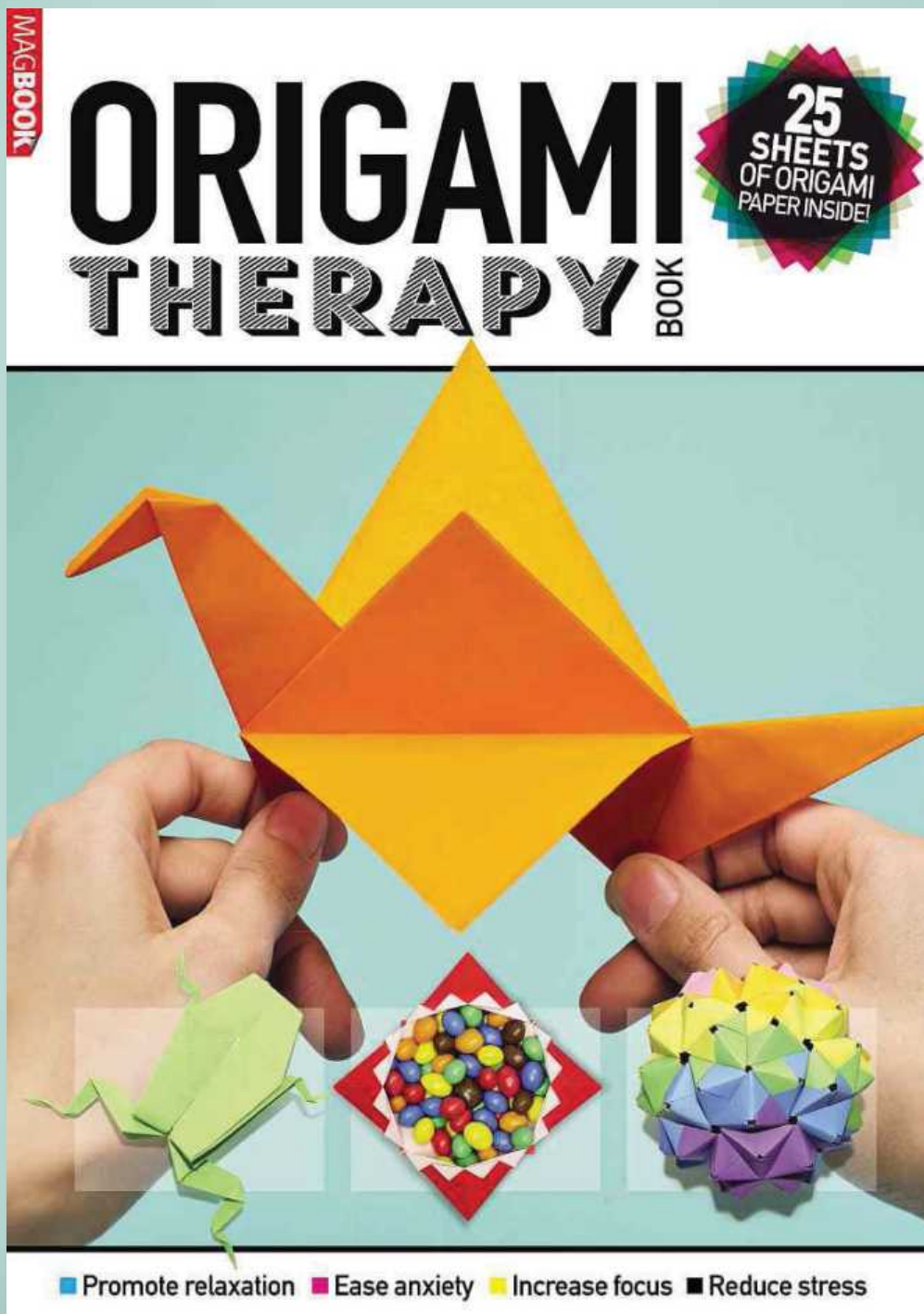
The story goes that it intended for Digital Research, which created CP/M-to, provide this vital part for a fee. But when it tried to contact the firm, its CEO had gone away for his annual month-long break. Microsoft stepped in, offered to license IBM an OS it had bought elsewhere, and the rest, as they say, is history.



▲ The amazing IBM 704 eats punch cards for breakfast in 1957

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▲ *Was the Storm the worst BlackBerry phone ever? Plenty of people thought so*

The IBM was a massive success, but IBM didn't own MS-DOS, and lots of parts of its computer were either based on other companies' designs or were intentionally based on open standards to encourage third-party support.

Within two years of launch, the IBM PC had entirely altered the market for business computers, destroyed the demand for almost all the competing devices and become a de facto standard across the majority of US and European businesses.

For the first time in its history IBM was a household name, and its stock valued soared as it delivered updated PCs and sold more mini and mainframe computers than ever before.

This golden time for IBM lasted a relatively short time, because it soon became apparent that companies could build their own designs, license MS-DOS (or DR-DOS) and get a chunk of this rapidly expanding market.

The market that IBM created grew exponentially, and in an attempt to wrestle control back, it created the PS/2 series. First appearing in 1987, the PS/2 was a PC with lots of technology in it that IBM exclusively controlled, like Micro Channel Architecture.

The lack of legacy support for ISA slots, the high pricing of IBM and the perception of market manipulation made for a dire combination, and people stayed away from the PS/2 in their droves.

That disappointment plus the advent of Windows and the move away from centralised computing platforms in business took their toll on IBM at the end of the 80s and in the early 90s.

The crunch year was 1993, when IBM was forced to admit it had lost \$8bn in 1992, then the largest sum in American corporate history. The PC it created had destroyed its mainframe business, and more agile competitors had beaten its PC products.

It only survived thanks to a radical plan instigated by new CEO Lou Gerstner, previously of American Express, who reversed the previous policy of spinning off the various

business units and focused on making IBM deliver unified business solutions.

Having previously told customers what they'd be getting, IBM started to listen to its customers, and because of this and a huge workforce reduction, the company returned to profit reasonably smartly.

Since then, it's mostly stuck with hardware-making subsidiaries and is now seen as one of the best businesses to partner with for those that need business computing expertise.

As a company, IBM has been to hell and back, but along with Microsoft it probably influenced modern computing more than any other.

Research In Motion

If you ask most people about RIM (Research In Motion), they probably won't immediately recognise the name, but they will if you mention its brand BlackBerry.

It came into the mobile communications market in a relatively modest way in 1996, with an interactive pager it built for IBM. Three years later, it had its own paging products under the BlackBerry brand, and eventually it entered the phone market in 2003 with its first handsets, the RIM 850 and 857.

While other companies had high-end devices, these were probably the first true smartphones, granting the owner access to calls, messages, email and even faxing on the move.

But by far their strongest feature was a push communications protocol that allowed messages and email to arrive on the phone much more rapidly than a conventional SMS message.

Once business people realised that a BlackBerry would alert them quicker, they flocked to it, and within a relatively short period, BlackBerry had a very dedicated userbase that included many influential people, like a certain senator from Chicago: Barack Obama.



▲ *Thorsten Heins, ex-CEO of BlackBerry Limited and the man who thought that one problem the firm had was that it 'innovates too much'*



▲ President Barack Obama on board Airforce 2, and on his hip is a BlackBerry smartphone

The growth of the BlackBerry platform was dramatic, as it went from just over half a million users in its first year (2003) to 50 times that by the time Obama became US president in early 2009.

The biggest year of growth was 2010, when the number of global users jumped from 41 million to 70 million between February 2011 and August 2011. Read at face value, those were golden years for BlackBerry, but that doesn't tell the whole story by some considerable margin.

BlackBerry users grew on the back of a smartphone use explosion, one that was entirely fuelled by the 2007 launch of the Apple iPhone.

To sample just how wrong this ultimately went, in 2008, the shares of RIM were valued at \$144, and in 2013 they'd crashed to \$6.50.

For those wanting all the gory details, there's an excellent book called *Losing the Signal: The Untold Story Behind the Extraordinary Rise and Spectacular Fall of BlackBerry* by Jacquie McNish (ISBN 1250060176) that lays out the chicken bones.

The reaction of RIM's senior people to the iPhone seems to have been pure hubris, as if the Apple device was a toy competing against its own tried and tested business-friendly device. It's business users wanted a real-ish keyboard and a small screen so only they could read their messages, and a compact go-anywhere design. Obviously, this was delusional, and the fact that many of the early RIM designs didn't even have colour screens hinted at the extent of its disconnection from its customers.

Another factor was that BlackBerry didn't start out with QNX. Instead, its original application platform was Java-based, and instead of developing an orderly transition, it switched overnight, ditching the Java development team and all the expertise they'd developed.

Mistakes like that, as well as the inability to build an extensive developer relationship or an app infrastructure, or to accept that its tiny keyboard and screen concept was past its sell by date, contributed to the decline in overall market share.

While BlackBerry had 70m users by 2011, Apple actually sold more iPhones in that year alone.

In terms of the overall smartphone market, BlackBerry went from first to second, and then Android appeared and it was third. From there, it jostled elbows, at less than 2%, with the likes of Microsoft Mobile and Nokia Symbian remnants.

If not reading the tea leaves of a disrupted market was one mistake, RIM delivered a few really special muck-ups all of its own creation.

A good example is the infamous BlackBerry Storm, launched in 2008 as a notional touchscreen phone. Reviewers tore it to pieces, and customers entirely ignored it.

They didn't like holding it, and they didn't like the cheap-feeling screen, the weight, the UI or how small your fingers needed to be to use it. Also less than idea was how the screen scrolled under touch, the built-in browser, the highly annoying 'Application Center' or the horrible camera.

I could list all the things that people unreservedly hated, but I've only got six pages for the whole article. The last word on the Storm should go to the inimitable Stephen Fry, who called the Storm "the Edsel of smartphones, an absolute smeller from top to bottom".

With products like that, even those who really loved their BlackBerry phones were having a hard time believing they were the best option, and things would only get worse with other problems the company generated.

The most significant of these was the disruption to service that occurred in October 2011. A problem started in a single core

“ That many of the early RIM designs didn't even have colour screens hinted at the extent of its disconnection from its customers ”

switch to the push email network and spread globally, creating a complete service outage. Two days later, there was another, and then suddenly business people all over the world realised that push messaging meant nothing if it didn't work reliably.

What compounded this problem was that RIM wasn't very good at explaining what the problem was or how it wouldn't happen again. There were further problems with the network, but the one message that did get through was that having a BlackBerry could have a massive downside in this respect.

Having thrown away a huge chunk of the smartphone market, a new CEO, Thorsten Heins, was ushered into position in 2011, determined to take back what had been lost. His plans hinged largely on the new BlackBerry 10 (QNX) product range.

Some of the things Thorsten Heins said at the time he probably regrets now, given that they seem delusional in the extreme. Of these "In five years, I see BlackBerry [being] the absolute leader in mobile computing" is my personal favourite from 2013.

RIM, by now rebranded simply as BlackBerry, fired him only eight months after that call to arms, and the decline continued without him. In 2015, it released the Priv, a phone that actually uses Android, but it includes the iconic physical keyboard as a slide-out feature. It hasn't sold well, and year on year, the number of users declines rather than grows, even if it's still selling handsets. [mm](#)

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Your Letters

TV Detector Vans

Andrew S. Redding is pretty much on the button. What he probably does not know is what happened in the early 1980's.

24 TV detector vans, using the Commer Cob van, were built, with the elephant's trunk antennas on the roof. It was intended that two vans would be assigned to the 11 TV regions in the UK. The other two vans would be kept at the depot in Stanmore Middlesex as spares and for use developing better detection techniques. Sadly the vans rusted about as fast as we could repair them so two per region was rarely achieved. As an aside, if the antenna was

pointed fore and aft it was probably not in use. The antenna core was made of polystyrene and was so weak the van could not be driven otherwise.

Bottom line is, a court case in Glasgow was lost because the accused found out that politicians would not allow the vans to be used in Northern Ireland. They considered it to be dangerous. He screamed 'DISCRIMINATION' The judge agreed.

The politicians would not back down so all the vans were taken out of service and scrapped. Most likely any new vans will meet the same fate

Ian McGarrigle

Adblock Plus And Facebook

I read your article describing the 'tit for tat code war between Facebook and Adblock Plus' with interest. I can well understand why the big advertising companies want to fill my internet life with ad, in the same way as they routinely deliver recorded advertisements to my mobile and home phone, and cover my doormat with mail. Of course, these advertisers are completely wasting their time, because their so called 'relevant and targeted advertising' is anything but relevant and/or targeted to me. If I want to buy something, I'll go and look for it myself.

I downloaded my copy of Adblock Plus, after I had to spend all of Christmas 2015 without my computer. This was because I was foolish enough to search on the internet for a new camera lens, without the protection of an adblocker. Google helpfully served up a wide range of camera shop web sites to investigate, including one whose security must have been compromised. I soon knew that I was in trouble, because the antivirus went berserk and a mass of really unpleasant pop-ups appeared. I disconnected from the internet and ran a full scan, but it was already too late. My antivirus no longer worked, and could not be updated. All of my contacts had vanished from my email

programme. Thank heavens that I do not bank online, and that I had an iPad on which I was able to change various passwords. For weeks afterwards, I received emails claiming to be from PayPal and insisting that I must enter my new password. What was astonishing to me, was just how quickly all of this damage was done. I tried everything, but in the end I had to hand it over to the repair man so that the hard drive could be wiped.

Facebook might think it to be unfair, that just because one shop's website had poor security, I am now blocking all adverts. But, it is my computer and my private life that was trashed by malware infested adverts, and I am now going to do whatever I can to reduce the risk of it happening again.

I don't feel guilty about this, because I generally don't go to the kind of sites that are maintained by advertising. I mostly go to paid-for sites, such as the BBC, and clubs and societies that I am a member of. If only I could just get an Adblocker for my phone lines and my letterbox, life would be so much better.

David Price

P.S. The 'war' is not between the internet and 'adblockers', the war is between malware writers/ criminals and computer users.

Alternative To Acrobat Reader

I may have written in before but there's an alternative to spyware-updated Acrobat Reader called the Evince Document Reader. More readily installed via Linux Distribution Software Managers its even available in Windows form to those willing to risk malware-infested websites, my current favourite being version 2.32.0 for use by Windows 7.

In case you are wondering I find that it's easier to use with less confusing multi-page print out capability.

Bruce R.

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Component Watch

Feel the power with this great PSU deals...

Keeping your PC clear inside is a great way to maintain a low temperature and prevent build-up of dust, not to mention make it a lot easier to tinker with when you open it up. That's why a fully modular PSU is a must-have accessory for any serious system builder!

Deal 1: Seasonic M12-II EVO 520W
RRP: £79.99 / Deal Price: £64.95

The Seasonic M12-II EVO line are some of the cheapest fully modular PSUs around – at least, of the names you'd trust – and this 520W version offers a great balance of price and performance. It has a five-year warranty, smart/silent 120mm fan, six SATA connectors, a 4+4 CPU connector, two 6+2 PCI connectors and one 20+4 motherboard connector – as well as five Molex and one floppy power. Everything anyone could want.

Where to get it: CCL Online – bit.ly/2cz9n7F



Deal 2: EVGA Supernova 650W
RRP: £99.99 / Deal Price: £79.37

This black-coloured PSU has a 135mm cooling fan, four 6+2 pin PCI connectors, nine SATA connectors, six Molex – and the floppy, CPU and motherboard connectors. What makes it worth looking at – as well as its 650W capacity – is its 80 PLUS Gold rating, which guarantees high efficiency across all operating loads. Perfect for anyone building a multi-GPU system, not least because it's made by EVGA – it would know!

Where to get it: LambdaTek – bit.ly/2d2m1g1



Deal 3: Be Quiet! Power Zone 750W
RRP: £119.99 / Deal Price: £102.39

This Be Quiet! Power Zone 750W PSU might not be quite as efficient as some cheaper models, but it has a higher capacity, extra ability to connect to case fans and a three-minute additional cooldown to prevent component wear after power off. You also get six 6+2 PCI connectors, a five-year warranty and (as the name suggests) some super-silent operation. Worth the money, especially with a discount like this.

Where to get it: CCL Online – bit.ly/2ctvKEB



Deal 4: Corsair AX 760W
RRP: £149.99 / Deal Price: £134.99

If you want to squeeze every drop of power out of your PSU, you need 80+ Platinum rating, and that's exactly what this Corsair AX offers. The 12V rail delivers up to 63.3 amps, and you get six PCI-E connectors, with a fanless operation mode and high-quality Japanese capacitors. The warranty is even seven years long. That's the kind of confidence in a product you can count on.

Where to get it: Ebuyer – bit.ly/2c7aVD0



Deal 5: Seasonic X850 850W
RRP: £159.99 / Deal Price: £143.99

This high-load, 80+ Gold rated PSU from Seasonic is enough to keep any PC user in high-quality power regardless of their system's needs. Fully modular with a hybrid multi-mode fan, it also has tight voltage regulation, which is essential if you're running an overclocked system that can't take dirty power. It's pricey, but as usual, there's a good reason!

Where to get it: Scan – bit.ly/2cq0UX5





It's A Wrap For New iPhone

Raspberry Pi Reaches 10m

And a hearty congratulations from us

What better way to celebrate having sold a bucketload of devices than by launching a brand new product? The Raspberry Pi Foundation has quite rightly boasted via its blog of ten million sales of what has become Britain's biggest computer success story.

Given that the Raspberry Pi board has only been around for less than five years, this is one heck of an achievement, although one that has obviously been assisted by the board being such a low-cost entry point into computer coding.

On the Raspberry Pi blog, founder Eben Upton wrote, "By putting cheap, programmable computers in the hands of the right young people, we hoped that we might revive some of the sense of excitement about computing that we had back in the 1980s with our Sinclair Spectrums, BBC Micros and Commodore 64s."

The foundation had considered lifetime volumes of 10,000 units an initial success: it's done so much better than that. To celebrate the sales success, then, there's a new premium Pi Starter Kit for £99 that comes with a Raspberry Pi 3 Model B, 8GB NOOBS SD card, an official case, official 2.5A multi-region power supply, official 1m HDMI cable, optical mouse and a keyboard, plus a copy of Adventures in Raspberry Pi Foundation Edition.

A good early Christmas present, then. Buy it through the usual resellers once it's available over the coming weeks.



▲ Look at all those toys! (photo courtesy of element14.com)

Peli Products updates range

Peli Products has got in there quickly following Apple's iPhone 7 and iPhone 7 Plus announcements, announcing a new range of cases especially for those new models.

The Adventurer range has clear backs to showcase the colour range of the new phones, and they're also

mightily thin, while promising Peli's usual dual-layer protection design to withstand the most extreme conditions on earth. Only on earth, chaps? Shame on you. Some of us have intergalactic travel in our sights.

Available for £29.99, you'll find these online.

➤ *I can see clearly now...*



Exploding batteries – probably not what Samsung had in mind for its latest smartphone. Sure, it might have wanted the launch of the Galaxy S7 to go with a bang and for it to sell like hot cakes, but this is ridiculous...

But (bad) jokes and 'incendiary' remarks aside, the numerous reports that we're hearing of S7 and Note 7 handsets bursting into flames raise important questions about where battery technology is headed.

Companies like Samsung and Apple have invested enormous amounts into making phones better. Processors are quicker, screens are sharper, but batteries? That's proving a much more difficult problem to solve. Manufacturers might eke out an extra hour here and there, but they do so by simply tweaking lithium-ion technology. This has been on the market for 25 years, so we're surely getting close to the limits of what it can do – safely, at least.

Batteries might not be sexy, but if we don't want more high-profile, expensive product recalls, then phone companies may need to start prioritising them. Or maybe just sell phones with complimentary fire extinguishers.

What are your thoughts? Drop us a your thoughts via letters@micromart.co.uk.

Anthony

Sony Previews PS4 Pro. Not Neo

Lighter, slimmer PS4 also on the way

Sony has unveiled its much-anticipated PS4 Pro console, planned for a 10th November launch.

Costing £349, which isn't too bad a price when you look at it, the Pro console (originally codenamed Neo) is unique for Sony, because it marks the first time a higher-end system has been introduced in the middle of a PlayStation platform's lifecycle. The Pro, as expected, supports video playback for 4K TVs and also 4K video streaming services. It delivers 1080p resolution for all PS4 games, plus higher or more stable frame-rates for some supported titles.

It's going to come with a 1TB hard drive to handle the extra graphical demands, and alongside this launch, all PS4 consoles were given a system update to support HDR imaging technology. The update (codenamed Shingen) also brought a refreshed UI, folder organisation and updates to the Quick Menu and Shared Menu.

The Pro wasn't the only hardware announcement either, as a new, slimmer PS4 is also now on the

market, costing £259. This revamp reduces the PS4's volume by over 30%, and it's also 25% lighter compared to the first PS4 model. A slimmer PS4 will help to boost sales a little coming up to Christmas, but whether the PS4 Pro is a big seller will depend on how much (and how many) consumers want to go 4K just yet.



▲ *Behold the PS4 Pro. Hardly a radical new design...*

Meanwhile... On The Internet...

If this column was decided by sheer weight of tweets in our collective timeline during any given week – it isn't; we're far less democratic than that, or Tory boundary changes (tinyurl.com/MMnet32a), or Labour leadership elections (tinyurl.com/MMnet32b) – this edition of Meanwhile... would be exclusively dedicated to *The Great British Bake-Off* (tinyurl.com/MMnet32c).

If you've been living on Mars for the last ten days, or... y'know, doing stuff that makes the world somehow better rather than trawling the internet, you may not have heard about the decision of the show's makers, Love Productions, to move from the BBC to Channel 4 (tinyurl.com/MMnet32d). The decision, which allegedly came after the BBC came up £10m short in its bid (despite protestations that the decision was not all about money, or at least the bid bottom line: tinyurl.com/MMnet32e), was met with pretty much all of the seven stages of grief across Twitter, Facebook, and more Op Ed inches than you can shake a stick at (tinyurl.com/MMnet32f). Even our esteemed publisher has some things (tinyurl.com/MMnet32g) to say on the matter (tinyurl.com/MMnet32h) as a non-partisan observer (tinyurl.com/MMnet32i).

The click-fest really went flying into overdrive, though, when it was announced that the two hosts, Mel Giedroyc and Sue Perkins, would be leaving the show and staying loyal to Auntie Beeb rather than returning to the channel where they cut their TV teeth (tinyurl.com/MMnet32j). Mary Berry and Paul Hollywood have kept schtum on the matter so far, but expect online meltdown when their decisions are made public.

The earth-shattering news was, of course, accompanied by its own hashtag – #Breadexit (tinyurl.com/MMnet32l) – as if we needed any more callbacks to what a draining experience 2016 has been so far (we're honestly agnostic on the politics of that, but it's been a tough old year whichever side you're on). Stay strong, everyone. We're at least 52% sure it's going to be alright. Anyway, not everyone was sad about the decision (tinyurl.com/MMnet32m).

If we were mentally strong enough to produce a listicle of the rubbish things that have happened this year (we're not), 'The *Fifty Shades Darker* trailer taking the record for the most views in the first 24 hours' (tinyurl.com/MMnet32n) would probably rank pretty high on the list because, well... did you see their first one? No? Lucky you... For the sake of our psyche, and to suppress the need to burn it all down, we're clinging to the idea that the rush was less about anticipation for the film as it was about the sheer weight of 'Oooh look, a new *Fifty Shades* trailer' articles doing the rounds.

We generally sit down to write this column on a Friday afternoon; far too late for the liking of our Editor, probably, but late enough to be as relevant as we can, given our production cycle. As such, we've been sitting around for a while waiting for news on whether Lauri Love – the British 'hacker', who's been fighting extradition to the US on allegations that he broke into FBI, military and US central bank computer systems – will be sent to the US to stand trial (tinyurl.com/MMnet32o). The news has just come in, and it wasn't for the 32-year old for him (tinyurl.com/MMnet32p), as you probably know by now.

Love's story, as these issues often are, has been a long and convoluted one (tinyurl.com/MMnet32q). Diagnosed as being affected by Asperger's Syndrome and depression, hopes had been high among his supporters that he would be allowed the same leniency as was afforded fellow Asperger's sufferer Gary McKinnon (tinyurl.com/MMnet32r) – especially following changes to extradition rules made by Theresa May in her time as Home Secretary, after she controversially reversed a court decision to hand McKinnon over to the US for trial. However, it would seem that judges at Westminster Magistrates Court did not see it in the same light. What's more, in a rather ironic twist, the same changes our Prime Minister made to extradition procedures following a review (tinyurl.com/MMnet32s) of the way things worked between the UK and the US (tinyurl.com/MMnet32t) may now work even more against Mr. Love, as they apparently limit what the new Home Secretary, Amber Rudd, can do to intervene in the court's decision.

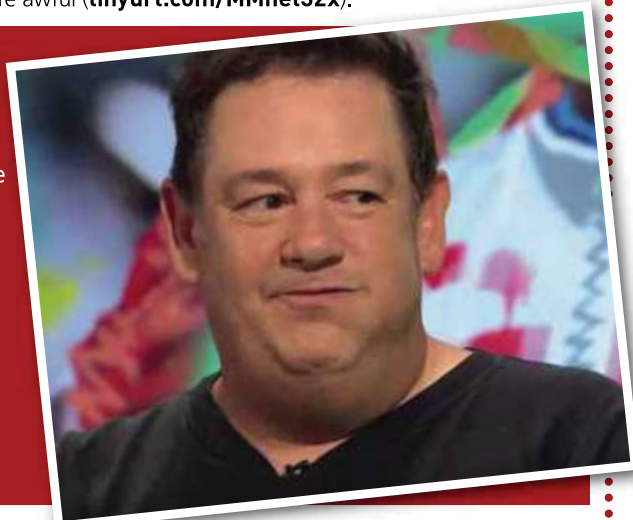
Now facing a trial that could end up with him being sentenced for 99 years, and face a massive fine, in the US for crimes that could only get him a little less than three years in prison over here, it's of little surprise that Love's legal team has already announced its intention to appeal (tinyurl.com/MMnet32u).

If you're not a massive fan of the idea of ISPs and GCHQ having a close working relationship, you should probably look away now, as the UK spying crew is proposing offering up its DNS filters as part of a package of protection to be offered up by its National Cyber Security Centre spin-off (tinyurl.com/MMnet32v). What could possibly be wrong with that? Apart from, you know, possibly everything (tinyurl.com/MMnet32w).

In part 7, 145,536 of 'That's Why We Can't Have Nice Things', we bring you the story of New York's free 'Link Tablet' service, which re-purposes telephone booths as information access points for residents and tourists. What a great idea, eh? Well, now authorities are being forced to suspend the use of the service because, basically, people are awful (tinyurl.com/MMnet32x).

.AVWhy..?

We've had a lot of fun watching the Olympics and Paralympics this summer. Strangely, one of the highlights of the latter has been the appearance of comedian Johnny Vegas at various events in Rio. There as part of the team from Channel 4's *The Last Leg* show, he's was seemingly everywhere during his time at the games (tinyurl.com/MMnet32y), acting as a cheerleader for Team GB or just generally having the time of his life. Though irreverent, and very funny, Vegas was notably emotional during his last appearance on the show from the games, and serves as a great advert for just how important, life-affirming, and entertaining it has been (tinyurl.com/MMnet32z). If you need more proof, though, look no further than Alex Brooker's wonderful tribute to the peerless Alex Zinardi (tinyurl.com/MMnet32Zinardi).



Caption Competition



"Antarctic Taxis, ready to p-p-pick up a penguin"

What's going on with these young folk? That's what we asked you two weeks ago, and here's a selection of what you came up with:

- **doctoryorkie:** "Driverless car prototype."
- **JayCeeDee:** "A young Richard Hammond checks how long a single charge will last on his electric car."
- **JayCeeDee:** "Keep pushing James – it's not far now!"
- **Dwynnehugh:** "Baby Jeremy Clarkson insists that his elder brother pushes him – or else!"
- **Spedley:** "Did I misunderstand VTech?"
- **Mad Malc is back:** "A celebration of global warming and it's only just September."
- **Thomas Turnbull:** "BBC Top Gear in major cost cutting exercise for next series."
- **Thomas Turnbull:** "The effects of Brexit has caused chaos in the car industry with assets frozen."
- **Wudger:** "*****ing satnav!"
- **Tom Black:** "Stop laughing. This is snow joke."
- **Dennis Wellbeck:** "Major courier company denies using child labour."
- **Jon Fielding:** "Wait until I get my hands on that salesman..."
- **Leigh Spriggs:** "Intel Inside – but not an engine, sadly."
- **Terry Martin:** "The AA – ready at a moment's snowtice."

Thanks to everyone who entered, and congratulation to our winner Robert Wheelhouse, who suggested "Antarctic Taxis, ready to p-p-pick up a penguin."

If you have a caption for picture below, head to the 'Other Stuff' section of our forum (which you can find at forum.micromart.co.uk), or email us your funniest ideas via editorial@micromart.co.uk. Just rememberi to add the issue number to the email subject line.



Morrisons Teams With Amazon

Lockers coming this year

Plans are afoot for supermarket chain Morrisons to install Amazon lockers around its supermarkets at some point this year.

Hundreds of the lockers, which allow Amazon customers to pick up orders while doing their weekly toilet roll shop,

will be installed. This follows on from the partnership already announced by the pair selling Morrisons' grocery items through Amazon Fresh, Amazon Pantry and Amazon Now.

From Amazon's perspective, supermarkets are what it calls "ideal locations" for its customers to collect their items.

Dell Deal Drops Workforce

Storage firm acquisition trims thousands

Following Dell's decision to buy data storage goliath EMC for a whole lot of money – over \$60bn, in fact – media reports have stated that thousands of employees will lose their jobs. Somewhere between 2,000 and 3,000 jobs

will go, with redundancies expected in the US in the main. A spokesperson told Bloomberg, "As is common with deals of this size, there will be some overlaps we will need to manage and where some employee reduction will occur".

Snippets!

iPhone Users Clumsier Than Samsung Owners

Insurance policy and claims data from mobile phone cover provider Loveit Coverit has suggested that over 42% of iPhone users note accidental damage in insurance claims compared with just over 21% of Samsung phone owners.

iPhone users are also over 71% more likely to claim for theft than Samsung owners.

Samsung's Share Price Takes Big Hit

Surprising nobody, Samsung has seen its share price fall dramatically following the Galaxy Note 7 recall.

Billions were wiped from Samsung stock following the news, and there have been some predictions that the company could stand to lose as much as £750m. In the meantime, Samsung continues to warn current Note 7 owners to hand their devices in, because the risk of explosion is very real.

There is currently an exchange program in place in the States, and the firm is "strongly" advising all customers to take advantage of it. Reports have suggested that more than 70 devices have overheated so far.

More Broadband Transparency

The Local Government Association has stated that its wants ISPs to provide accurate data about the broadband speeds that consumers can really get.

The LGAs argument is that speed estimates that cover a wide range of homes (such as via postcode-based estimates of 'upto' speeds) are not sufficient enough to help people choose between providers. The body representing local councils across the UK doesn't think it's right that consumers should have to carry out their own line speed tests and wants Ofcom to have the power to demand address-level speed data from providers.

ViewSonic Launches Display For Creatives

24" monitor delivering professional-level colour precision

Monitor maker ViewSonic has announced the 24" VP2468 display, a Full HD 1920 x 1080 model offering professional-level colour precision for "colour-critical applications", so it's aimed in part at creative types.

The VP2468 monitor comes with six-axis individual colour adjustment and colour processing functionality, an edge-to-edge SuperClear IPS panel and also claims to come with "one of the world's thinnest bezels for a frameless viewing experience". Aside from the focus on outstanding colours, the VP2468 also comes with DisplayPort, mini-DisplayPort, dual HDMI inputs and four USB 3.0 ports for maximum flexibility and connectivity to devices and peripherals.

Finally, ergonomic features include tilt, swivel, height adjustments and auto pivot with built-in G sensor. allowing the screen image to pivot automatically when positioned vertically. Available for £229, this should be shipping now.



Instagram Filters Offensive Comments

Keyword filtering update lessens abuse

Instagram has rolled out an update for all users allowing people to filter comments on the service. Having already been launched for business accounts earlier in the year, the update has brought a 'Hide Inappropriate Comments' feature to all users.

There are two options on this: either automatically block a default list of offensive words from the comments or add certain words to the list using the Custom Keywords list

feature, allowing various phrases and words to be kept under wraps even if they aren't considered to be offensive in the traditional sense of the word.

This may be of no importance to you, but high-profile social media user Taylor Swift was reportedly an early tester of the feature ahead of its launch, and both options are now active on the service. Can we just say that we approve whole-heartedly of this update.



Smartphone Reaches For The Skies

World record attempt from Swedes

People will try anything these days to get into the Guinness Book Of World Records.

The Swedish branch of Huawei Technologies sent the company's Honor 8 smartphone up into the skies earlier this month in an attempt to set a record for the highest livestream from a mobile phone. Attaching the device to a weather balloon that also carried up

with it a camera "and other equipment", the chaps at Huawei Technologies were hoping to send the balloon all the way up to 30,000 metres. In the end, it managed 18,421 before bursting, and the company is still hoping that Guinness will recognise this as a world record.

A strange story that does at least remind us all of just how far smartphones have come since their early days.

"Pay More", UK Music Tells YouTube

Artists not being given enough money from site

British music campaigning and lobbying body UK Music has called out YouTube for not giving artists enough payment for their artistic works.

The comments against YouTube's payments, first reported by the BBC, come as part of UK Music's latest Measuring Music report looking at how much British music

contributes to the UK economy, writing that YouTube is "yet to deliver fair financial returns for rights owners and creators, artists, composers, songwriters and publishers".

YouTube defends its position by saying it has paid out more than £2.3bn to the music industry but UK Music doesn't think that's enough, saying that per-stream rates have fallen over the last year.

Seagate Staff Sue

Personal data goes missing

Well this is all a little embarrassing. Storage company Seagate is being sued by its own employees because of an HR leak.

A phishing email was sent to the HR department earlier this year, a phishing email to which someone responded. The email purported to be from the CEO of the firm – and promptly gave up details of workers, including names, addresses and social security numbers. The employees concerned were both present and past workers,

and the leaked data concerns thousands of workers.

Understandably, this isn't the kind of thing that goes down well with people, so some of those employees have now launched a class action lawsuit against Seagate, claiming negligence, asking for damages to be paid out to anyone suffering financial loss from the leak. Seagate is countering the argument by stating that it couldn't be responsible for unforeseen actions of criminals using the data and that there is no evidence of any actual financial loss to employees.

Amazon Planning More Physical Stores In US

Why?

Business Insider has reported that Amazon is planning on opening more pop-up stores across the pond.

The report claims that a source has said that "dozens" of new stores will be opened in shopping centres over the next year. The pop-ups are basically storefronts for selling Amazon's hardware devices – Kindles, Fire TV, etc. – while also hopefully driving additional traffic to the online store. Currently, Amazon has 16 pop-ups in the

US, and the report claims that this figure is expected to rise to over 30 this year and could possibly reach 100 by next year.

It's a strange concept, going to a physical store of the world's greatest online shopping source. Frankly, we have no idea why anyone needs these to exist.



Asus ZenBook UX310UA

A notebook that's lean, mean and devilishly good looking

DETAILS

- Price: £700
- Manufacturer: Asus
- Website: goo.gl/TXYjMM
- Requirements: Windows/Microsoft account, wi-fi access (no Ethernet available)

Asus's well-established range of 13.3" ZenBooks have improved over the last couple of years to a point where its selection now includes some of the finer smaller-footprint notebooks available today. The UX310UA is certainly something to be impressed with. A gorgeous looking notebook, it features a snappy Intel Core i5-6200U processor running at 2.3GHz – with a boost clock speed of 2.8GHz – a generous 8GB of DDR4 2133MHz memory, a SanDisk 128GB SSD (upon which there's a copy of Windows 10 Home 64-bit Edition pre-installed) and a further Toshiba 500GB, 5400RPM traditional hard drive to handle the bulk of the storage duties.

All this is fitted snugly into a stylish, solid aluminium chassis that measures just 323 x 223mm and 18mm at its thickest point while weighing a remarkably light 1.45kg with the battery installed. Its connectivity comes in the form of a pair of USB 2.0 ports, a single USB 3.0 port and a further USB 3.1 Type-C port – along with HDMI, a multi-format SD card reader, audio combo port, HD webcam, 802.11AC wi-fi (with WIDI support) and Bluetooth 4.1.



▲ The Asus ZenBook UX310UA is extraordinarily thin



▲ However stylish it looks, it also packs a decent performance punch

It's styled the same manner as many of Asus' current ZenBook range, regardless of the size. The aluminium body is patterned slightly on the lid with concentric spirals, due to the machining process we imagine, with the Asus logo dead centre.

Opening the lid reveals a backlit and familiar looking Asus keyboard setup, with decently spaced keys – although the arrow keys are considerably smaller than we're used to. There's a large touchpad in the centre of the notebook's base, that's quite

sensitive and gesture capable with a surrounding brushed aluminium finish for the rest of the base. It's a good design and one that's sturdy as well being pleasing to the eye.

The performance of the UX310UA is certainly good. Considering it's designed as a lightweight home or student setup, it's quite a responsive notebook. While it's not gaming grade, that distinction being left for the Nvidia GPU-based higher-end of the ZenBook scale, it can still hold its own with some older titles, or should the user want to try

out a couple of less-demanding titles from their Steam library. Day-to-day duties, office programs, video and photo editing and general all-purpose users are easily handled by the good combination of memory and processor, and the 3200 x 1800 QHD+ LED display looks very good indeed.

As for benchmarking, we measured a score of 2611 on PC Mark 8, which puts it slightly behind a 2013-rated gaming PC. That's better than the majority of office-grade machines around today.

The Asus ZenBook UX310UA is a great lightweight notebook. There's ample performance, plenty of storage and a superb display to complement an already marvellous looking design. The price too isn't as high as you'd normally expect for a notebook with these features, either. At £700, it's quite reasonable considering what you're getting. It's certainly worth looking into, come your next notebook upgrade.

mm David Hayward

A stylish and great-performing notebook



Adam Elements Casa M100 And B200 Cables

Good quality cabling comes at a price

DETAILS

- Price: M100 £18; B200 £19
- Manufacturer: Adam Elements
- Website: www.adamelements.com
- Requirements: Devices with USB Type-C

A few months ago, a USB key was sent to me by Adam Elements and I made a mental note to ask what other products it might have that would be of interest. The Casa M100 and B200 jumped out, as part of a cable range it's introduced for both PC and Apple Mac use – with these two items specifically for those using the new USB Type-C standard.

For those who haven't tried USB Type-C, I'd highly recommend it. It's a major improvement over previous solutions on so many fronts. The only negativity about it was that, early on, some low-cost cable makers didn't really understand how Type-C worked, resulting in some data/power mishaps. Unfortunately, with Type-C able to send so much more power through than Micro-B, having it go in the wrong places can be detrimental to the hardware it's attached to. It didn't help that the official cables from Apple cost a small fortune – and, naturally, after a few scare stories people got very sniffy about Type-C cabling.

I've a few cheap cables and they work acceptably, but they're not remotely as nice or as confidence-inspiring as the

CASA M200 and B200.

The M100 is the classic conversion cable that has Male Type-C at one end and Male USB 3.9 Type-A at the other, allowing you to, for example, charge a Type-C phone from a PC USB port or make a file transfer between the two. The '100' number refers to the length, and at 100cm it is sufficiently long for most jobs. A Velcro cable tidy is attached, however, so you can make things neater if you don't need the whole length.

The quality of the M100 is exceptionally high, using nylon fibre cabling and precision-cut aluminium caps. The way these are terminated ensures that the wires won't be coming loose and time soon.

For those who like colour coding they come in four distinct colours: red, grey, gold and – for Apple fans – rose gold. The review cable was gold, which did

seem a little ostentatious for this reviewer's taste, but you can't mark it down for that.

The B200 is also a 'sync & charge' cable, but it has Type-C connectors at either end making it reversible. It's 2m long but built to the same exacting standards as the M100. With extra length, I noticed that – for whatever reason – this cable is slightly stiffer than the M100, though it relaxed quickly when uncoiled from its packaging. The colour of my review item was 'Gray', though the cable was black and the end of the connectors more of a gunmetal shade. This was considerably classier, in my opinion, than the gold – but this is also available in that same colour or red if you like either of those alternatives.

These aren't stupidly expensive, but they're hardly cheap either. However, by way of comparison, the official



Apple equivalent of the B200 is £25. On consideration, I think these are better and seeing as, at least in this reviewer's view, Type-C is going to be a standard for some considerable time, buying cables designed to last many years is probably justifiable as a sound investment.

mm Mark Pickavance

Very high-quality USB-C cables, made to last



Western Digital My Cloud Pro Series PR2100 16TB

Western Digital goes all out for performance with their Pro Series PR2100

DETAILS

- Price: £899
- Manufacturer: Western Digital
- Website: www.wdc.com
- Requirements: Wired network with Internet Access, Windows 7/8/10 or OS X 10.8-10.11.
- Product Code: WDBBCL0160JBK

Western Digital's NAS solutions have been getting progressively better since it entered this sector and gradually polarised its range into home and business-oriented solutions. The new My Cloud Pro Series builds on previous designs by delivering more compact and refined offerings, in the form of the four-bay PR4100 and dual drive PR2100 reviewed here. The review system came with two of the latest WD RED 8TB drives pre-installed, though you can buy this unit with smaller capacities or as a bare system if you don't need the 16TB of potential drive space on offer.



PR2100 Specifications

Processor: Intel Pentium N3710 1.6 GHz
Memory: 4GB DDR3L
Drive Bays: two
Maximum Capacity: 16TB (2x 8TB)
Interface: 2x Gigabit Ethernet
Raid Levels: JBOD, RAID 0, RAID 1
Compliant Standards: DLNA (Certified), UPnP
Service Support: Apple Time Machine, DLNA Media Server, Dropbox
Encryption: 256-bit AES
Size: 147.8 x 216.1 x 108.6 mm
Weight: 3.48kg

By default, that's configured in mirrored redundant drive mode with an 8TB capacity, but you could easily reconfigure that to give you the full 16TB if you don't mind the possibility of it all disappearing if one drive fails.

This hardware is about more than a massive storage potential, though, something I realised when I got to peruse the specification sheet. Built around Intel's Pentium N3710 processor, it features 4GB

of DDR3 memory and has a hardware video transcoding engine optimised for Plex. While that's great and makes this a sparkling home media server, I'm not sure business users will see the same value in the video transcoding capabilities. They're more likely to be enticed by the dual Ethernet ports and dual power supply options. As expected the dual gigabit link can be channel bonded with a suitable hub to deliver very



“ My Cloud OS just doesn't seem to be evolving rapidly enough ”

high levels of performance to multiple users simultaneously.

In a single user test, I achieved a sustained 114MB/s, which is close to what you can realistically get out of a single gigabit Ethernet port.

Availability is also enhanced with the ability to use two external DC power packs, although only one is provided in the box. Those also wanting to hand external drives off the PR2100 can do so through the two USB 3.0 ports available.

There is one at the rear and another on the front, that's associated with the control for copying the contents of an external device over to the internal drives. That's great for anyone doing photography or video work, as they can plug in and dump their work onto the network with a single push of a button.

On the whole, I have no issues with the hardware here. It's powerful and yet remarkably compact, and the

WD designers have resisted the temptation of making it look like a faux book. The weakness of this product range, however, is that My Cloud OS just doesn't seem to be evolving rapidly enough to keep up with this super-competitive market sector. I first saw this interface about three years ago and, while it's embrace of Cloud services have extended, in other respects it hasn't progressed in one critical area.

Where Synology has 101 apps, this system offers you just 17 to add to the four that come pre-installed. There are some useful ones, like Acronis TrueImage, Joomla and WordPress, but the growth to get this limited selection has been glacial. Therefore, if you want apps then look elsewhere – unless the specific ones that have been added so far are the exact ones you need.

For more general use the PR2100 is better specified as it has most of the features that anyone wanting to deploy a small office server might appreciate. That includes iSCSI, volume virtualisation, DLNA, Apple Time Machine, Cloud Backups (ElephantDrive and Amazon S3), plus the usual suspects of FTP and SNMP. You can also install WD apps on your phone or tablet that allow you to access contents on the server even when you're working away from the office, conveniently. This all works rather well, and it's relatively easy to deploy and control on either a group or individual basis.

That just leave the price to discuss. With two 8TB

drives installed in this unit, it was never going to be what you'd consider a steal. That said, the WD Red 8TB drives (WD80EFZX) in this unit cost £339 each and the bare PR2100 unit is £380, so buying one with the drives pre-installed could save you £159. However, according to prices provided by Western Digital, the best value is the 12TB model where the saving is £218, though it's true of most of the capacities on offer. Personally, as prices fluctuate between suppliers, I'd do my own enquiries and calculations before investing, just to get the best deal.

My view of the WD My Cloud Pro range remains much the same after spending time with this iteration as it was after encountering it previously. The hardware is excellent, but the software side of the equation still needs some work and badly needs to attract more third party applications to supplement the few WD have managed to entice so far.

mm Mark Pickavance

A powerful NAS box with plenty of capacity pre-installed



Magix Music Maker 2016 Premium

New Music Maker will help you create your own unique sounds and music

DETAILS

- Price: €130
- Manufacturer: Magix
- Website: www.magix.com
- Requirements: Windows 7, 8, 10
2 GHz processor or higher, 2 GB RAM
9 GB free hard disk space, Graphics card resolution 1024 x 768
Onboard 16-bit sound card, Internet for activation

If you don't have any experience with creating music, either electronically or by physically playing an instrument, then it's unlikely that you've ever considered the possibility. Yet, with a program like this latest offering from Magix, you don't need to have much by the way of musical aptitude – or be able to play an instrument, for that matter.

Music Maker is a virtual music studio, complete with inbuilt pre-recorded sounds covering dozens of instruments that can be mixed and edited using a drag and drop interface. If you can play an instrument you have the bonus option of playing and recording any of these sophisticated instruments yourself. Yet the main strength of the program is that this is not by any means a requirement.

This latest version of Music Maker has had quite a makeover, with a completely redesigned interface arranged in a more logical layout where the Media Pool, containing your sound collection, is located on the right of the now-unlimited number of tracks you have at your disposal. So, it's a simple sweeping motion to move sounds onto the tracks.



Other improvements to the interface include new colour coding and icons, which provide a visual aid to the speedy selection of individual instruments and sounds. In addition, the F2-3-4 keys control various display options, where the lower portion of the screen can now be switched off, providing more room for the extras tracks.

With the advancement of recording techniques, the instruments are even better than before. This is particularly noticeable in the three new instruments: Church Organ, Choir and Cinematic Soundscapes. I was particularly impressed by the combination of the Choir and Grand Piano, which together can create a magnificent full orchestral sound. Yet these are just a fraction of the sounds available to you. The version I reviewed

is the Premium package, which comes with twelve Soundpools containing over 8000 sound loops, alongside twelve virtual instruments. The Soundpools contain clips and loops based on different genres, like Hip Hop, Trap, Reggae, Techno, Rock Pop, Chillout and House. All of these are editable as well, to the point where by overlaying and making use of the master effects rack, you can completely change each sound to make it unique. The Mastering Suite also has an Auto Mastering option where you can completely change the style of your project with a single click of the mouse. Many of the effects are quite subtle, but the composition you've created will go some way to determining how much it's affected. The Suite includes a Parametric EQ option.

As before, the program is very much object driven; like a video editor, you can move objects between tracks and stretch or edit them to suit the composition you require. However, the easiest way to begin is by using the Song Maker; it can create a complete music track for you automatically. You simply choose an appropriate Soundpool, select the instruments you want to be in your orchestra, band or group. Then you need to click on the component parts of the track in terms of its phrases, so you might, for example, choose an intro, verse 1, chorus, bridge and an outro. Of course this can be any combination you like, and finally you have to set a tempo and phrase length and press the create song button. In this way you have a quite complex song structure to start with or a finished song, it's your choice.

This review only scratches the surface of what the program is capable of and, to get the best from it, you'll need to invest a fair amount of time learning the features and controls. Yet, whether you're a complete novice or a seasoned musician, Music Maker has lots to offer.

mm Joe Lavery

Spice up your videos with Magix Music Maker Premium



Corel PaintShop Pro X9 Ultimate

Is Corel's new PaintShop Pro X9 Ultimate worth an upgrade?

DETAILS

- Price: £80
- Manufacturer: Corel Corporation
- Website: www.paintshoppro.com
- Requirements: Windows 7 or newer, Intel Core Duo 1.8GHz, Core i3 or AMD Athlon 64 X2 3800+ 2.0GHz, 2GB of RAM (4 GB for 64bit) 128MB VRAM, 1GB of available hard-disk

When most savvy computer users talk about image editing they would say that something's been 'Photoshopped'. I guess in the same way that most of the planet 'Google' when searching for something, nobody other than Microsoft employees would say 'let's Bing it'. Yet there are other options available.

This latest version of PaintShop Pro X9 Ultimate is, at the very least, quite capable of editing to the same standard as Photoshop. Some would say it includes quite a bit more inside the package, yet all without incurring a monthly subscription. In fact, the PSP package includes four separate products designed to work together: the main PSP organiser/editor, Aftershot 3, Athentech Perfectly Clear and Corel Live Screen Capture.

The main star of the show is the PSP Editor, which has been updated with a few new features. Some of the original ones have also been enhanced or expanded to bring them in line with new technologies. For example, the batch processing tool – that allows you to apply certain editing procedures to a number of images at the same



▲ The main editing screen, showing the new gradient fill option



▲ AfterShot 3 is probably worth the whole package price

time – has now been extended to include the Smart Photo Fix command. The upshot being you can optimise and improve a batch of images at once.

The text tool has also been improved with a simpler toolbar that still manages to show all the options available. It makes the selection and graphic adjustment of any text easier and quicker. There is also a new range of new text presets to provide instant and potentially complex, effects in a single click. Most are free, but some have to be paid for. I must admit to being baffled about how they decide which are simple ones have a price.

Not a new concept, yet new to this edition is the New from Template option, allowing those

without any previous editing experience to produce quite professional looking projects. Corel has always been known for including a mass of free clip art and images, yet the range provided with PSP is not exactly generous. Also, the lion's share of those on offer (once again) have to be paid for. However, I concede that the New from Template option in itself is a great help for new users.

Another new option that is genuinely useful is the screenshot utility located in the file menu. It's great for capturing images from websites or screenshots of other programs (always a bonus if you are reviewing). When selected, it immediately minimises the PSP program ready for use. Afterwards, the

capture is immediately transferred to PSP for editing. There are settings provided for different types of capture – so, for example, you can choose from full-screen, marquee select or the current window.

The icing on the cake is the addition of Aftershot 3 to the package; it's probably worth the price on its own. It has the appearance and feel of Adobe's Lightroom, so is ideal for those that like to spend time creating a photographic masterpiece. The amount of control you have and adjustments you can make are almost unlimited.

Because it's an image processor rather than a traditional editor, the changes you make are saved to what's called a sidecar file. Then, regardless of how many versions are saved, the original image remains untouched. It also has batch processing, the facility to grade and sort you image collections. What's more, it handles RAW format as well.

I don't think there's enough new content to recommend an upgrade for existing users. Yet I would certainly recommend it to anyone new to image editing.

mm Joe Lavery

Excellent value for money



Necropolis: Brutal Edition

Dungeons, loads of loot and countless exotic creatures to slay

DETAILS

- Price: £18 via Steam
- Manufacturer: Harebrained Schemes
- Website: goo.gl/eKD5Gd
- Requirements: Windows 7+, Mac OS X, Core 2 Duo 3GHz CPU, 4GB memory, GT-630/Radeon 6670+

Back in July, developer Harebrained Schemes released *Necropolis*, a cleverly designed dungeon crawler, *Rogue*-like with hints of *Dark Souls* and an expansive death trap to explore and plunder. However, due to player feedback, the developer has since released an expansive update and renamed the game *Necropolis: Brutal Edition*. The base mechanics haven't changed much, but there's plenty to get your teeth into and many hours' worth of content to battle through.

Necropolis: Brutal Edition has you in control of one of two character types: a fast moving 'Blackguard' or a slower but far more powerful 'Brute'. Armed with just a simple sword and shield, you begin your quest through a procedurally generated labyrinthine dungeon that's constantly changing around you.

There are ample enemies for you to dispatch, ranging from undead, Harryhausen-inspired skeleton warriors to two-legged man-eating sharks. Each enemy conquered will drop money, a weapon, some armour or a shield you can pick up and use.

In addition to the weaponry and cash dropped, you'll find scrolls, potions and food to help top up your stamina and health



▲ Varied and dangerous enemies emerge from crystals in some areas



▲ Enemies can cluster and become even more dangerous if you're not careful

meters, as well as ingredients with which to craft more powerful items, potions, food and so on.

The environment itself is made up of smooth moving, sharp-edged polygons. It's minimalistic in appearance but effective due to the low light conditions and details in the finer objects scattered throughout. The game finds a neat balance between visual effects and gameplay, enough to interest you and pull you into the strange story that's being comically narrated alongside other quirky elements.

The update provides you with a new outdoor environment to explore, new enemies to cleave into numerous body parts – including a bandit who will

steal the contents of your inventory – and new loot. Furthermore, the developers have improved the gameplay performance and tweaked the health and stamina cost and balance somewhat.

Getting into the game is certainly easy enough, although aside from an informational 'these are the controls' board at the beginning of the starting level, you're pretty much left up to your own devices. In terms of exploring and seeking out the hidden depths of what's in store.

Although the enemy population starts out with just one or two, it's not long before you're having to deal with crowds of assorted enemies, each with their own unique way of fighting. Clever tactics are

needed here, along with plenty of health to survive the fights and enough stamina to be able to still swing your sword.

Death, though, is commonplace and it's permanent. Unless you're fighting alongside three other friends, you'll not be able to revive and continue the battle from your last stand.

The multiplayer drop-in-drop-out is an interesting feature where you can instantly invite someone to join in your dungeon slog or leave accordingly. It's quick and doesn't rely on the usual time-wasting session joining that so many other games tend to follow.

It's fair to say that a dungeon crawler of this type is never going to be much more than a niche title. The repetition that occurs after death or visiting some areas of a dungeon, is a little tiring at times. However, we think the game has enough content bubbling under the surface to keep you interested and coming back for another go.

mm David Hayward

A cleverly designed dungeon crawler



Roccat Skeltr

A clever keyboard to unite the PC and the mobile device

DETAILS

- Price: ~£150
- Manufacturer: Roccat
- Website: goo.gl/EWz7I5
- Requirements: Windows 7+, two spare USB ports, iOS or Android compatible



▲ The Roccat Skeltr looks very impressive, but it's also very expensive

Roccat's impressive range of peripherals has expanded recently with the arrival of the Skeltr, a keyboard that was originally announced a couple of years ago. It is designed to unite the mobile and PC platforms, with a set of features you won't find from any other manufacturer.

At first glance, it's a large (520 x 250 x 30mm – including detachable wrist rest) membrane keyboard with five programmable macro keys to the far left of the keyboard and a further three programmable profile keys located under the space bar. It is RGB backlit, allowing a combination of 16.8 million colours in a variety of effects and setups. It has a 1000Hz polling rate, 512KB of memory and a 32-bit ARM CPU helping to drive its many functions and features.

The key feature of the Skeltr, though, is that it's designed for use with both PCs and mobile devices, allowing an easy switching between the two and accommodating any phone or tablet with a deep groove that runs almost the entire length of the keyboard in which it can sit.

How it works is quite simple, really. The Skeltr is USB powered, using up a couple of USB ports on the PC, with an audio pass-through microphone and speaker cable at the end of a 1.8m braided cable. The USB connectivity enables both the



▲ The use of Bluetooth for mobile and USB for PC in a single keyboard is an interesting concept

“ The Skeltr is a good keyboard with an interesting set of features ”

keyboard itself for use on the PC as well as a built-in Bluetooth 3.0 and for providing power to a USB port at the rear of the keyboard.

While you're working on your PC you can have your mobile device sat in the keyboard's groove, powered via the USB port to the rear – and, should you receive a message or need to type on your device, you simply press and hold a key in

the top right of the Skeltr to activate the Bluetooth element and swap functionality to the device. When you're done, you press the key again to change back to PC mode.

In practice, it works well, but only after you've paired the keyboard with your device. At first, we encountered a few issues with the switchover; either the PC failed to release the keyboard or

the device failed to enable it. However, after a few attempts the two platforms started talking to the keyboard and it worked as well as Roccat envisaged.

Realistically, we don't often have the need to change from PC to device, since all our emails, messaging and so on are conducted within individual browser tabs or a third-party program on the PC. Our phones are simply there to handle calls, which the Skeltr can intercept through another set of keys and send to a headset connected to the mic and speaker ports at the rear of the keyboard.

There's potential here for the Skeltr to be the keyboard of choice for a hot-desk setup, where tablets are used instead of PCs and power comes from a powered USB hub. It's an interesting idea, but not one that's utilised much at present.

The Roccat Skeltr is a good keyboard with an interesting set of features. How useful it'll be is difficult to predict, but there are no-doubt users who will be drawn to its unique pairing of PC and mobile provision. At around £150, though, it's expensive – even for those who do need to use a keyboard for both platforms. **mm David Hayward**

Interesting, but a bit expensive and perhaps unnecessary



GROUP TEST

5.1 Speakers

For many of us, a simple soundbar under one of our monitor is all we need for gaming and watching content via our PC.

However get your hands on a 5.1 speaker set and everything could well change. Until you can hear bullets whizzing by you in *Battlefield 4*, a TIE Fighter screaming overhead or the wind rushing past your ears as you plummet from a building, you haven't experienced what a game should really sound like

5.1 Speakers

Creative A550 5.1 Speakers

DETAILS

- Price: £60
- Manufacturer: Creative
- Website: goo.gl/0XT72L
- Requirements: Compatible sound card, audio output source

Creative's A550 5.1 speakers consist of five 5W RMS satellite speakers and a 12W RMS subwoofer. An odd-wired remote is included, which reminds us of the sort of thing you'd find on an old Betamax video recorder, but it's functional enough, even if it's just for power and volume control.

The satellite speakers are interesting, to say the least. They incorporate Creative's Dual Slot Enclosure (DSE) technology, which apparently delivers louder playback by separating the port tube into two individual slots and engineering them to fit into a smaller speaker case. A video about the technology is available, which features lots of animated blue arrows and clever graphics. In basic terms, the technology allows the sound quality of a bigger speaker to exist in a smaller one.

In addition to DSE, Creative has also added another technology in the form of IFP (Image Focusing Plate). Again, while very technical, it means the satellite drivers are flared at the end to help push the sound out to a wider area. It may sound gimmicky, but it works surprisingly well.

The design of every aspect of the A550 is quite superb. The speakers look great,



▲ *Creative's A550 5.1 speaker set is well priced and well designed*

► *There's plenty of technology involved, but the cables are a little short*

they're compact enough to fit virtually anywhere, and are all tough enough to withstand nearly any environment you'll place them in. The sub, too, is of exceptional quality and will take a good kicking should someone with uncontrollable feet sit at your desk.

As for sound quality, it was exceptional. In fact, we haven't heard anything this good since we reviewed an £800 set some months ago. Every frequency range was excellent, and the sound levels coming from those relatively small speakers was above and beyond what you would expect from such a compact set.

But there are few problems we feel we need to point out. While the DSE/IFP technology is great, it does expose the cones on the satellites. Normally it wouldn't be a problem, but should someone or something touch them, they could be damaged quite easily. Also, the leads are rather short: around 1.2 metres for the front speakers and 3.5 metres for the rear.



That's fine for a small office, but not so good for a home theatre setting. Finally, the wired remote is attached to a laughable 1.2 metre cable, which means you'll have to leave it lying near the sub or in the middle of the floor if you're planning on using these in the living room.

Those problems aside, the Creative A550 5.1 speakers are a fantastic set. Sound quality is excellent and the price is affordable too.



Logitech Z506 5.1 PC Speakers

DETAILS

- Price: £70
- Manufacturer: Logitech
- Website: goo.gl/Fvr02B
- Requirements: Compatible sound card, output source

The Z506 5.1 set is part of Logitech's lower-end multi-speaker product range and features five satellite speakers: two 8W front units, one 16W centre and a pair of 8W rear, along with a 27W subwoofer, bringing the grand total RMS power to 75W.

Speaker cables lengths are always a problem with these kind of low-price sets, but the Z506 doesn't do too bad a job. The satellite cable length for the front pair are two metres, with 2.8 metres for the centre and a more than reasonable five metres for the rear pair.

The design is good too. The sub is surprisingly compact, and the five satellite speakers are of the tall, slim variety. The centre speaker is more horizontal than the others, but again it's quite a compact set. There's also a folding kick stand fitted on the centre speaker, so it can rest on top of an AV shelf comfortably.

Although they feel a little cheap, all the speakers are reasonably well constructed. We wouldn't fancy dropping any of the satellites from desk height, admittedly, but we're fairly confident they could withstand the usual amount of abuse a deskbound speaker set would take. The sub is well built too, which is important, because desktop 5.1 sets can get kicked around when the sub is located under the desk.

Controls are on the right, main satellite speaker, with



▲ The Logitech Z506 kit is easy to use

“ Sound quality is very good, which is surprising for a cheaper-feeling set ”

volume and power alongside ports for a headphone and mic. Depending on where you position everything, it's well within reach, but it's worth noting that the bass control is located on the back of the sub, which can get a little awkward if you need to alter the levels for the type of media you're listening to.

Sound quality is very good, which is quite surprising for a cheaper-feeling set. The bass levels were excellent, once we'd fiddled with the controls, and the satellites picked up every audio detail without dropping or missing anything from the

ranges. Voice and higher frequencies were particularly good, and the mid-range audio was nicely complemented with the bass turned down slightly.

Movies, games and pretty much everything else we could throw at the Z506 were handled extremely well. And due to the more compact design, they could happily sit on a desk without getting in the way too much.

Overall, we were pleased with the Logitech Z506 5.1 set. It may lack digital optical inputs, having just 3.5mm six-channel inputs, with a serial input for the front right speaker, but it's enough for a basic connection



to virtually any device or system. And since these are PC-orientated speakers, they're perfectly matched for older PCs, as well as newer machines.



5.1 Speakers

Microlab FC360 5.1 Speakers

DETAILS

- Price: £98
- Manufacturer: Microlab
- Website: goo.gl/3ej9E6
- Requirements: Compatible sound card, audio outputs

We've reviewed a number of Microlab products in the past; the B58, FC50 and T1 and all have impressed us with a decent build and audio quality.

The FC360 are made up of five 14W RMS satellite speakers and a 30W RMS subwoofer offering a total of 100W RMS. There's also a 5.1 amplifier included here, which everything connects to and which provides the power on/off and manual volume controls. Finally, there's a handy remote that we're happy to say comes with batteries.

This Microlab set isn't the best-looking we've ever seen. The satellites are all of the tall, vertical type that cheaper speaker systems tend to opt for, with the centre speaker horizontally placed.

However, although they may look a little dated, they certainly make up for that in terms of build quality. The satellites are more than capable of being moved around without fear of them falling apart, and in particular, the sub is certainly tough enough to deal with the occasional kick while positioned under a desk. The amp is the exception here, and we imagine Microlab has put slightly more effort in the design of this than the speakers, as it's more than likely going to be the thing that's on show.



▲ *Microlab's FC360 5.1 set may look dated, but the sound quality is decent*

The amp is a rather splendid polished-black affair with a minimalist slim design, perched on four large rubber feet. All the necessary 3.5mm speaker connections are around the back in a well-spaced cluster, with further red and white 3.5mm inputs, as well as a six-channel colour coded batch.

It's worth noting that when we moved the set closer, emulating a desktop setting as opposed to a home theatre setting, the voice depth did appear to improve. This we assumed was due to a lack of power from the front speakers, when placed further apart.

The remote, admittedly, isn't



“ The bass, mid and higher range frequencies were clear and crisp ”

Sound quality was impressive in our tests. The bass, mid and higher range frequencies were clear and crisp and kept that level of clarity as the volume increased. The HD audio movies and games we tested this set with were mostly handled without any discernible drop in audio quality. However, we did find that voices tended to feel a little distant at times and lacked any real depth.

brilliant. It only really seemed to work when we were a few feet away from the amp, which is certainly annoying especially considering that these are somewhat more expensive than the examples we've tested so far.

The front and sub cables were roughly one and a half metres in length, which is a little too short for our liking. But the rear cables were at least six metres plus in length, which was more than enough for larger living spaces.

The shorter front cables may be an indication that Microlab is aware of the lack of voice in the front speakers and has, therefore, shortened the cables to bring the sound closer to the user. Either way, the performance and quality is good enough for games, movies or music, but this set is also expensive.



MS-Tech LD1500 5.1 Sound System

DETAILS

- Price: £70
- Manufacturer: MS-Tech
- Website: goo.gl/pDGTK5
- Requirements: Compatible sound card, audio output

Although it's known mainly for making cases, mice, keyboards, power supplies and so on, the German company MS-Tech also makes a small selection of PC audio products too, including the LD1500.

The LD1500 is made up of four upright satellite speakers with 3" drivers of 5W each, with an additional horizontal centre speaker. The sub is a large monolithic structure that dishes out 25W RMS through its 5.25" driver, totalling 45W RMS across the range. There's a remote with the set (one that includes batteries, thankfully), which is quite large and 'retro' looking, like something you'd expect to find in a car boot sale.

The design of the satellites is simple, square and functional, with a silver stripe partway down the front of the mesh. They could easily be considered as being dull looking, but that's made up for with the tall silver and black sub, complete with many buttons for source, volume, power and so on, and a digital display that appears to only show random numbers at different intervals.

We can't blame the designers for making it look like something from the 80s, but we can blame them for the abysmal sound quality that comes from both the sub and satellite speakers.

The sub was certainly problematic. We've never heard

so much distortion and vibration from a sub before – even one we've intentionally turned right up to a window-pane-loosening level. It's simply un-listenable and sets your teeth on edge.

The satellite speakers aren't much better either. Their ear-piercing shriek was close to making our ears bleed, and again the amount of distortion was simply terrible.

The movies, games and music we listened to were messed up beyond belief. And to add insult to injury, there were a shocking number of sound problems across the whole set, with missed audio sections and frequent popping as a speaker suddenly decided to lurch into action. Our

Babymetal collection has never sounded so bad – and that's saying something.

Surprisingly, the remote was excellent. In fact, it one of the best wireless remotes in this group. It even worked when we were in a different room. It's just a shame that MS-Tech couldn't have applied that working technology to the rest of the system.

We have no idea how good the other products from MS-Tech are, but we have heard they're rather good. We're guessing, then, that it dropped the ball significantly with the LD1500 5.1 Sound System.

The average price for the LD1500 is around £70, but to be honest, we'd recommend you steer well clear of this set.



▲ *The rather poor-quality MS-Tech LD1500 didn't fare too well*

► *The audio quality is very low quality, and the set is quite expensive*



5.1 Speakers

Xenta XForce 5.1 Surround Sound Speaker System

DETAILS

- Price: £59.99
- Manufacturer: Xenta
- Website: goo.gl/h8VAvx
- Requirements: Compatible sound card, audio outputs

Xenta, which is a part of Ebuyer, has a number of peripherals in its range, including some interesting speaker sets.

The Xenta XForce 5.1 Surround Sound speaker System is an extraordinarily cheap solution for anyone wanting to have a full desktop, audio set. The system comprises of five satellite speakers, which dish out a combined maximum of 50W RMS, and a subwoofer capable of 30W RMS. There's also a handy remote, which is good to see on a system of this price, and the usual RCA speaker cables come as standard.

The build quality of the entire is remarkable, and it will certainly take its share of abuse from wayward feet. The plastic stand for each of the satellite speakers isn't the greatest we've seen and it does look a little on the cheap side, but it works nonetheless.

The media remote works well, although it doesn't come with batteries – a small niggle but one that's quite annoying. Surprisingly, it doesn't feel cheaply made. In fact, it's one of the better functioning and well-made remotes of the group.

There's ample connectivity around the rear of the sub, although there's a lack of digital connections – which isn't surprising at this price level. Thankfully, the kit comes with all the necessary



▲ The Xenta XForce 5.1 kit is remarkable considering the price

cables you'll need to get up and running with connection to a PC.

Audio quality is excellent. The mid and higher range sounds were clear and crisp in our tests, and the sub did a wonderful job of filling the

XForce, but it really began to shine when we started gaming. The louder and deeper explosions and distant gunfire from *Battlefield 4* were perfect, and the middle and higher range frequencies – including voices – from



“ TV shows and movies sounded fantastic with the XForce ”

room with a meaty bass. In fact, we'd be willing to pitch this set against some of the considerably more expensive audio sets we've reviewed in the past. Although it may look a little on the cheap side, Xenta has done an excellent job when it comes to the audio quality.

TV shows and movies sounded fantastic with the

Assassin's Creed: Syndicate were spot on too. Incidentally, playing *Star Wars: Battlefront*, there's nothing quite like having a TIE Fighter scream overhead and into the rear distance through this set.

We were pleasantly surprised with the Xenta XForce 5.1 Surround Sound Speaker kit. It's affordable, at just £59.99 – the cheapest

in the group – and it sounds terrific. The build quality may not be brilliant, but once in place, it should be adequate for most users and sets.

In short, a great 5.1 set for your PC.



Genius SW-G5.1 3500

DETAILS

- Price: £75
- Manufacturer: KYE Systems/Genius
- Website: goo.gl/VKUN4u
- Requirements: Compatible sound card, audio output source



▲ The flashy looking Genius SW-G5.1 3500 hides poor quality throughout

KYE Systems may not be a familiar name to most people, but the company has been producing peripherals for HP and Microsoft and others since at least 1983. The Genius label, however, is what KYE Systems uses to sell its kit directly to the public, and these 5.1 speakers are from its GX Gaming range.

The SW-G5.1 3500 is a colourful and interesting speaker set. The four satellites and central speaker manage 10W RMS each, with the sub offering 30W RMS, totalling 80W RMS output. Each satellite speaker features a 3" driver, and the sub houses a surprisingly large 6.5" driver.

The design of the SW-G5.1 3500 is quite extraordinary and, as we said, quite colourful. There's a multi-coloured LED located at the bottom of the sub, set below a control panel that oddly covers a large percentage of the sub's driver.

Each satellite is identical, making it a little awkward to determine the best placement for the speakers, with a black glossy surface and a shiny red driver.

The entire set is made from a decidedly cheap plastic, with the exception of the sub which is has plastic casing (again, very cheap) surrounding a wooden frame. Although it should

take its share of potential kicking under a desk, it's still pretty lacklustre in the quality department, as are the satellite speakers.

The rear of the sub features a basic input set of ports, along with the five outputs for the speakers and a power button. The front, though, has the oddly positioned control panel, with volume and bass controls, line-in and headphone speakers, a standby button and a button to select between two- or five-channel sound.

All the controls at the front, though, can be managed via the wafer-thin remote that's included with the kit. It's a fairly average remote, as cheaply made as the rest of the set, but it works well and from a reasonable distance.

The sound quality and performance from the SW-G5.1 3500 wasn't great; in fact, it was some of the worst we've heard in quite some time. There was plenty of bass from the sub, a little too much most of the time, but the high and mid-range frequencies felt weak, and the voice was far too distant



to pick up over any deeper background noises such as explosions and the like.

There were also a worrying number of missed audio sections and more popping and crackling than we encountered from the MS-Tech 5.1 set.

With poor audio output and even worse build quality, the Genius SW-G5.1 3500 set isn't going to win any awards here. To add insult to injury, it's priced at around £75, which beggars belief when you compare it to a good set such as the Xenta or Creative A550 – both of which are £15 less.





Xenta XForce 5.1 Surround Sound Speaker System

We were really impressed with the Xenta XForce 5.1 Surround Sound Speaker System. It's well priced, the build quality is good, and the audio quality is excellent.

Sure, it could with a few improvements, but considering it costs just £59.99, you won't go far wrong with this set.



Creative A550 5.1 Speakers

The Creative A550 5.1 speaker set is a great system for virtually every user type. It's a high-quality set with great audio and that Creative edge that still makes the company top of the PC audio market.

How We Tested

Each 5.1 speaker set was connected to a standard desktop PC with a Creative Sound Blaster VX 5.1 sound card fitted. We played a variety of games, watched some HD content and listened to various types of music.

	Creative A550 5.1 PC Speakers	Logitech Z506	Microlab FC360 5.1	MS-Tech LD1500 5.1	Xenta XForce 5.1 Surround Sound	Genius SW-G5.1 3500
Price	£60	£70	£98	£70	£59.99	£75
Sub Dimensions	190 x 230 x 210mm	185 x 235 x 210mm	255 x 255 x 287mm	318 x 175 x 333mm	230 x 255 x 210mm	230 x 215 x 327mm
Satellite Dimensions	72 x 147 x 79mm	75 x 148 x 80mm	88 x 200 x 102mm	162 x 92 x 85mm	100 x 105 x 180mm	112 x 140 x 99mm
Front Speaker Cable Length	1.2M	2M	1.5M	2.3M	2.4M	1.5m
Rear Speaker Cable Length	3.5M	5M	6M	3.7M	5M	1.5m
Remote	Yes, wired	No	Yes	Yes	Yes	Yes
Satellite Watt RMS	5x20W	4x8W, 16W	5x14W	5x5W	5x10W	5x10W
Sub Watt RMS	12W	27W	30W	25W	30W	30W
Total Watt RMS	37W	75W	100W	50W	80W	80W

Top 5

Football Games

Not including FIFA or Pro Evolution, of course...

1 Football Manager

Beginning life in the early 90s as *Championship Manager*, this series of ridiculously addictive football management games eventually ended up with a new publisher (Sega) and a new name. Developed by Sports Interactive, the series was the brainchild of Paul and Oliver Collyer, who programmed the first *Championship Manager* game from their bedroom.

These days, *Football Manager* is every bit as addictive as it ever was, and the game has expanded massively, with far greater depth to the management experience, as well as mobile versions, so you can seek sporting glory no matter where you might be.

2 International Superstar Soccer

Long before Konami ever released a *Pro Evolution* game, the *International Superstar Soccer* series was already a big success on a variety of games consoles, starting with the first game on the Super Nintendo in 1995.

In spite of not having a licence to use real player names, the first *ISS* game nevertheless featured player sprites that were clearly meant to resemble actual footballers, with iconic figures such as Ruud Gullit being easily identifiable.

It was also a fun, fast-paced game, but the 1998 version of the game on the N64 will always be a favourite with us, thanks to the ridiculous long-range goals you could score and the fantastic player editor.



▲ If only the England team could be this organised...

3 New Star Soccer

Football games, by their nature, are pretty well suited to mobile platforms, because you can easily fit in a quick game or two on a bus or train journey, saving as you go. But *New Star Soccer* (for Android, iOS and Windows) takes the soccer genre and makes it even more ideal.

Rather than controlling an entire team, it puts you in the boots of one player. On the pitch, you don't play in real time; you just perform the passes and shots that come to you during a match. And you also have to juggle your relationships, your training and purchases of boosts that will get you through the game. You even get to buy and train race horses. There's a lot more to it than that, but all you need to know is that it's highly addictive and fun.

Unfortunately, since it moved to a freemium model, it's become a bit of a shameless cash grab, like the majority of other games with in-app purchases. But if you ever played the original version, then you'll know what we're talking about.

4 Adidas Power Soccer

Not so much a game as a massive advert for a sports brand, *Adidas Power Soccer* is the football game that time forgot.

Google it, and you'll find it doesn't even have an English Wikipedia page, only a French one. Even "animals with fraudulent diplomas" has an English page.

Anyway, if you can remember as far back as 1996, then you might have memories of this PlayStation title. And if you do, you probably don't recall its realistic gameplay. What you might remember, though, is the arcade mode, which allowed you to kung-fu kick opponents, pull off special power shots (Predator shots, as in Adidas Predator boots) and deliberately handball. Oh, it included video adverts for Adidas products, which appeared at half time.

5 Nintendo World Cup

It's hard not to imagine that whoever created *Nintendo World Cup* had never actually watched a football match before, because it was a very loose interpretation of the beautiful game. For a start, it only included six players on each team, including the goalkeeper. Considering the limitations of the NES, though, on which it was first released, that's perhaps understandable.

What's more puzzling is that there are no fouls in the game and no offsides. Best of all, however, are the power shots, which enable you to score from almost anywhere on the pitch, with the ball either moving at super-fast speeds or performing loops in the air, before smashing the back of the net.

If anything, it's more like *Shaolin Soccer* than actual football, but ultimately, that's what makes it so great. [mm](#)

Can The Internet's Abuse Problem Be Solved?

Sarah Dobbs looks into the ways various platforms are trying to combat trolls



At this point, there's no point trying to deny it: there is a massive problem with abuse on the internet. It's not a new phenomenon, of course. For almost as long as the web has existed, people have been using it to be horrible to one another just as often as they've been using it to share knowledge or make friends. Can you remember the first time you heard the phrase "don't read the comments"? It was probably years ago. More than a decade, even.

Recently the issue seems to have escalated, however. It's not just that there are people online deliberately trying to start arguments – it's that there are people online deliberately trying to ruin people's lives, just for the fun of it.

The most recent example to hit the headlines is the Twitter harassment of comedian Leslie Jones. Trolls started to target her when it was announced she'd been cast in director Paul Feig's *Ghostbusters* remake, and their attacks reached critical mass in the week the film was actually released. There isn't space here to discuss their motivations in great detail, but suffice to say, the torrent of vitriolic racist abuse aimed at her wasn't just coming from disappointed Bill Murray fans.

Twitter Terror

Jones fought back at first, but eventually conceded defeat and abandoned her Twitter account for a while until Twitter CEO Jack Dorsey responded to her pleas for help. The site deleted the accounts of many of the trolls Jones had highlighted and issued a statement



▲ *Twitter abuse got so bad Leslie Jones had to take a break from the platform*

confirming that Twitter doesn't condone abusive behaviour and will take action against it. Jones resumed tweeting from her account, but the trolls hadn't finished with her – at the end of last month, hackers accessed her personal files and posted many of personal, private photographs on her website, along with some racist memes.

The Twitter abuse hasn't stopped, either. A visit to her account – @lesdoggg – on Twitter will amply display the nastiness she receives on a daily basis, and could cause you to lose some faith in humanity in the process. She's just one example, though: other users may not attract the volume of hatred she does, but there's still plenty to go around. Sure-fire ways to render your Twitter Mentions unreadable include participating in political discussions (especially if you use hashtags) or being a woman with an opinion on literally anything, but even avoiding those things won't necessarily guarantee you won't one day find yourself a target.

Of course, it's not just Twitter where this happens. Anywhere people can interact with people they don't know is a potential minefield, whether that's Instagram, Tumblr, or just the comments section of your favourite news site. So far, no-one really seems to have much of a plan for dealing with it. Is this just how things are going to be online now? Will internet hatemobs eventually drive more sensible types offline entirely, or are we all going to have to be extra careful to censor ourselves to avoid calling down their rage on our heads? Let's take a look at the strategies that are currently in place for cutting off abuse.

Reporting

Most sites seem to use the same standard procedure for tackling abuse: install some kind of 'report' button, have users report other users for posting inappropriate material, and then employ someone to review those reports as they come in. At first glance, it seems like it should work, right? It probably would if we were just talking about a handful of people occasionally posting something horrible but, in practice, it's failing. Badly.

The Leslie Jones example demonstrates one of the reasons why: relying on users to report abuse means, well, users have to report abuse. While some systems, like the Disqus commenting platform, include buttons to flag comments without needing to load up another screen, others make reporting abuse rather more arduous. Instagram, for example, demands need to click through to a commenter's profile before you can make your report on what they've said. Twitter is better than it used to be in this respect, and you can now click on a drop-down menu from an offensive tweet to hit Report.

A popup window will ask you why you're reporting it, in what specific way it's offensive, and whether it's targeting you or someone else. Then it'll display a list of the user's other recent

tweets, and if other tweets are similarly abusive you can add up to a further five tweets to your report. Finally, it gives you the option to mute or block that account, so you won't see any further nastiness from them. If you're doing it once, it's a fairly simple process that should provide Twitter's support team with all the info they need to decide whether or not to remove the account. If you have to do it 20 times, though? It gets a bit more arduous. And if you need to report literally hundreds or thousands of abusive tweets? That starts to feel like an unmanageable burden.

There's another problem, too, and that's that one of the trolls' main goals is to silence people they don't like. Abuse reporting systems like the ones Twitter, Facebook, Instagram and more sites use allow trolls to waste services' time, and can even result in legitimate accounts being temporarily suspended.

“ So far, no-one really seems to have much of a plan for dealing with it. Is this just how things are going to be now? ”

Given that, some kind of variation on the report abuse mechanism exists everywhere, and yet there's as much abuse posted online as ever, it's pretty clear it's not working. So what else can be done?

Real Names

The core question here probably concerns what it is about the online space that allows people to say horrible things that they'd never say them to someone in person? Over the years, researchers have attempted to figure out what it is about the internet that creates such a fertile ground for vileness, and the most common conclusion is anonymity. Online, no-one really knows who you are. You can sign up for an anonymous Twitter account in a matter of seconds, and then it appears you can say whatever you want to anyone you want, without any fear of repercussions.

▲ *Twitter's abuse reporting system is pretty involved nowadays*



▲ Facebook's community standards sound good, though the bit about what isn't abusive sounds a bit defensive...

So could making people associate their online identity with their offline one help curb the abuse issue? Well, maybe. Several platforms have already tried it. YouTube comments used to be one of the worst cesspools for trolls but, at the behest of its owner Google, you now need to use your Google account to comment there. For many of us, our Google account is our main online identity, and it's used across many different sites and services, so it feels less disposable that a quick sign-up and more real than some other usernames. Nowadays, YouTube isn't quite as bad as it used to be, so maybe it's working.

The system's not perfect, however. You only have to look at Facebook to see that. Ever had an argument with a friend of a friend on Facebook, and been shocked at how vitriolic they were willing to be, right where all their friends and family could see it? Yeah, me too. Sites that use Facebook logins for comments also don't tend to be markedly more civil than sites that use other logins, so it's clear that some people just aren't bothered about signing their names to outright abuse. Plus, as Facebook has also illustrated, it's tremendously hard to make people use their real identities online, and if you try, many people will resent it – some for very good reasons.

You might not mind using your real name online, but if you had a stalker, you might be less keen. Or if you lived in another country where the things you say online could land you in real life trouble? Then you might need another online ID, even if all you're doing is mildly criticising your government. You can probably think of other reasons someone might not want to have their real name published online, too.

Twitter seems to be thinking about the connection between anonymity and abuse, though. Recently, it changed its verification process. Previously, there was no way to apply for the coveted 'blue tick' denoting you absolutely were the person you claimed to be, and all you could do if you wanted one was wait and hope someone on Twitter's team thought you were worthy of the accolade. Now, you can apply. It's still not for everyone – you have to be some level of famous or well-known to get one – but a lot more people are verified than before. However, if you are verified, you can choose to filter the tweets you see so that you're only hearing from other verified people.

There are obviously problems there, too, but it's a feature that could at least reduce the amount of trolling high-profile types – or, for example, journalists and writers have to read.

New Tools

Speaking of high profile types, another recent super-famous target for abuse was singer-songwriter Taylor Swift. After a very public beef with Kanye West and Kim Kardashian, Instagram users started targeting her photos, leaving comments that consisted of nothing more than dozens of snake emojis. Actual fans saw their comments buried under snakes. Then, mysteriously, those comments disappeared. Instagram didn't explain exactly what had happened but did admit that it's testing new tools for dealing with abuse, and that some users have been given preview access to it, to try it out before it's rolled out to the masses.

Twitter, too, has announced that it's working on something to help filter out abuse. The filtering tool has apparently been in development for at least a year, and works by detecting specific keywords and filtering tweets that contain those words. We won't print any examples, but you can probably think of a few likely candidates.

Knowing that there are things in development that might help clean up the internet's grimmer corners should be reassuring. After all, it wasn't too long ago that you might find offers from Nigerian princes and Viagra salespeople landing in your inbox, but email providers have now more or less got the spam issue under control – it might still get sent, but for the most part, you'll only see it when you delete your spam emails. Could a similar system work for comments systems?

What Constitutes Abuse?

Where do you draw the line between a heated disagreement and actual rule-breaking harassment? According to Facebook and Twitter, it's a pretty difficult thing to call, and recently many people have expressed frustration at having reported something nasty to the sites' abuse teams only to be told there was nothing wrong with those posts. We're not going to replicate the nastiness here but, suffice to say, if this stuff was aimed at you I'm confident you'd consider it abusive.

Delving into their community guidelines and rules shows that both sites are a bit fuzzy on exactly what is and isn't considered acceptable. Twitter's help section says:

"We've all seen something on the Internet we disagree with or have received unwanted communication. Such behaviour does not necessarily constitute online abuse."

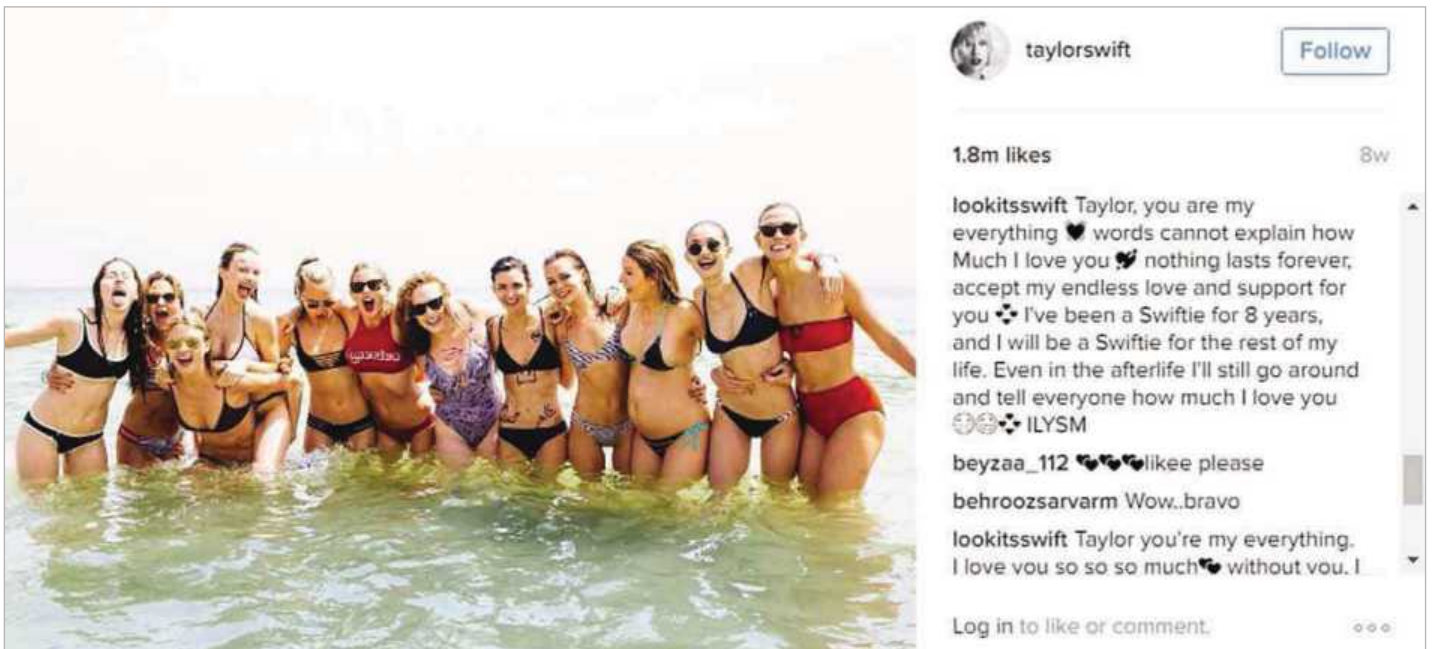
The page goes on to recommend unfollowing and blocking anyone you don't want to interact with or, if they're a friend, sitting down with them in person to discuss the matter. It kind of feels like maybe our old RE teacher wrote these guidelines, but it does eventually say:

"If you continue receiving unwanted, targeted and continuous @replies on Twitter, and feel it constitutes online abuse, consider reporting the behaviour to Twitter."

You can see more at support.twitter.com/articles/15794

Facebook has slightly more defined criteria for behaviour it won't tolerate:

"We don't tolerate bullying or harassment. We allow you to speak freely on matters and people of public interest, but remove content that appears to



▲ Taylor Swift's Instagram was inundated with trolls, but it's all been cleaned up now

Again, it's only part of a solution. A lot of websites – including Facebook Pages – have lists of banned words that will lead to posts being automatically removed. It doesn't take long to work out ways around such filters, though, and it's not always words that are the problem. A lot of Jones' tormenters used images, which are harder to filter out. A lot of problematic words might be used by people in other contexts too, and banning them completely might cause problems.

Twitter's solution needs to be a lot cleverer than just a swear word filter. It'll have to be super intelligent to differentiate between internet dialect and the kinds of messages designed to bully the recipient.

What Else?

So how can we stop the internet becoming unusable for anyone who doesn't fancy daily abuse? Well, anti-troll software would help. So, too, would clearer guidelines from websites and social networks about exactly what is and isn't acceptable, and what the consequences are, backed up by the will to actually enforce the rules.

Beyond that, it's clear that the solution to the online world's troll problem is more complicated than magic anti-rudeness software. While the internet makes it easier to harass people – both because of the anonymity, and because platforms like Twitter make us much more accessible to many more people than ever before – what we're dealing with here isn't just an internet problem.

The internet is just, to misquote a classic film, people. Maybe once the offline and online worlds were separate, but now it's clear that they're very closely related. As a culture, we can't afford to and dismiss the issue as being just 'the internet'. It doesn't have to be like this, but people need to know that there are consequences for their online behaviour, just as there are in the real world.

To some extent, we need to examine our own behaviour, and that of the people around us, and question whether it's really okay. We need to hold one another to account, and not let the bullies win. There's not an easy answer, because there's never been an easy answer; there'd never be another war, or another murder, or another child crying at school because they're being teased, if this was an easy thing to do. But if we don't try, we might as well just give up.

Twitter, Facebook, Instagram, and all the rest, need to work harder to protect their users (and not just their celebrity ones) but also, we need to do a better job of protecting each other. [mm](#)

◀ purposefully target private individuals with the intention of degrading or shaming them. This content includes, but is not limited to:

- Pages that identify and shame private individuals,
- Images altered to degrade private individuals,
- Photos or videos of physical bullying posted to shame the victim,
- Sharing personal information to blackmail or harass people and...
- Repeatedly targeting other people with unwanted friend requests or messages."

Again, see more at www.facebook.com/communitystandards

Again without going into detail, there have definitely been occasions when people have reported groups for posting photos of people with the intent of humiliating or stalking them, and Facebook has decided that the content was unobjectionable. So maybe there's still some work to be done there.

Unexpectedly, the platform with the most explicit guidelines on how its users should conduct themselves is Flickr. Among other guidelines, you'll find this:

"Don't vent your frustrations, rant, or bore the brains out of other members. Flickr is not a venue for you to harass, abuse, spam, impersonate, or intimidate others. If we receive a valid complaint about your conduct, we'll send you a warning or delete your account.

Don't be creepy. You know the guy. Don't be that guy."

You can read them in full at www.flickr.com/help/guidelines

Other sites could probably do worse than adopting Flickr's stance – and, of course, following through and enforcing it in notable ways.

10 Ways To Customise Windows 10

Tweak Windows 10 Anniversary Update and change the way it works to suit you better with Roland Waddilove's top tips

Windows 10 Anniversary Update is here and it's better than ever. Have you tried it yet? If you have not yet upgraded from Windows 7 or 8, or applied the Anniversary Update to 10, now is the time because the latest version of Microsoft's operating system is looking great and is gaining market share.

Even so, there are tweaks and customisations that you might want to apply to make it suit the way you use your PC. There are many ways to customise Windows 10 and here we take a look at our 10 favourites.

1 Hide Cortana And Search

The search box and Cortana take up a lot of space on the taskbar, especially if you work on a laptop with a small screen. It can use a third of the space available on some screens. This might be put to better use for pinning icons of frequently used programs, which is a convenient place to launch them from.

Right-click an empty part of the taskbar and on the Cortana submenu are three options. The default is 'Show search box', which shows the combined Cortana and search box on the taskbar. Avoid this if you want to create extra space on the taskbar. Instead, select 'Show Cortana icon' and the search box is hidden, but a small round Cortana button remains and clicking it enables you to talk to the digital assistant, asking questions and issuing commands.

The 'Hidden' menu option hides both Cortana and the search box. You can still search when the search box is hidden. Click the Start button or press the Windows key to open the Start menu and type in whatever you want to search for. As soon as you begin typing, the Start menu is replaced by the search box and suggestions begin to appear with every keystroke.

2 Quick Actions

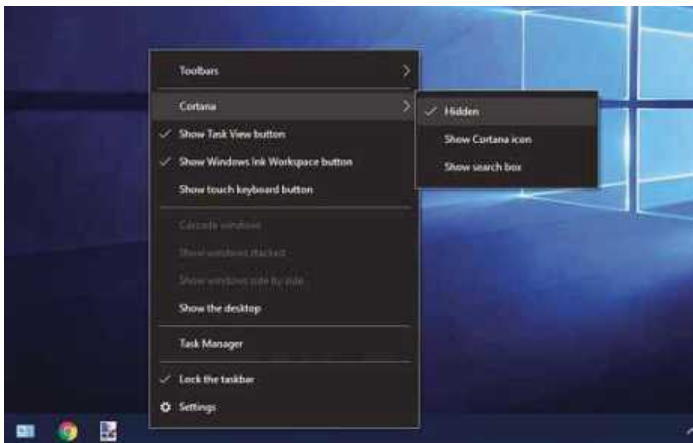
Click the icon at the far right side of the taskbar and the Action Centre panel slides in from the right. At the bottom are a collection of configurable buttons, that allow you to choose what to display and the order they appear.

“ There are tweaks and customisations that you might want to apply to make it suit the way you use your PC ”

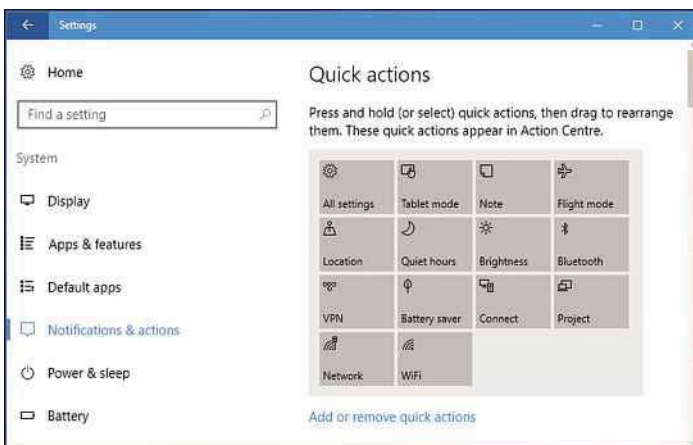
Press Windows+I to open Settings and click System > 'Notifications & actions' on the left. The current set of buttons is shown and if you click and hold a button, it can then be dragged to move it to a new position. Underneath the buttons is a link to 'Add or remove quick actions'. Click it, and the items available are listed with on/off switches enabling you to choose which ones to use. If you never use tablet mode, for example, turn it off and the button is removed. If you always use wi-fi and never turn it off, remove the button.

3 Customise The Taskbar

The taskbar is the one item in Windows that you probably use the most. It has the Start button, icons to start apps, notification icons, the clock and date, and so on. There are many ways to customise it, just right-click an empty part of the taskbar and select Settings (the Anniversary Update



▲ Hide Cortana and the search box and free up space on the taskbar



▲ This menu allows you to choose which quick action buttons you want and sort them into the best order

is different to the previous Windows 10) and the Settings app opens and offers up a range of options.

Right at the top is 'Lock the taskbar'. Turn it off and when the mouse is over the top edge, it changes to a resize cursor. Click and drag the top edge to provide more rows for icons. If the following switch that automatically hides the taskbar is on, it won't take up any screen space when running programs.

Another way to gain more space for icons on the taskbar is to turn on 'Use small taskbar buttons'. In addition to shrinking the icon sizes, it also hides the search box and replaces it with a Cortana button. This is very useful for laptops with small screens where you can easily run out of taskbar space.

Down near the bottom of the settings is 'Combine taskbar buttons'. When there are several icons for apps on the taskbar, it isn't always easy to see the one you want without thinking. Select 'When taskbar is full', and labels appear next to apps that are open, for example, the path in Explorer, the web page title in Edge, and so on.

4 Themes, Colours, Transparency

It has been possible to customise the look of Windows for many generations, at least as far back as Windows XP. Windows 10 is no exception and if you don't like the default look, or simply want to stand out from the crowd, you can easily install a new theme, change the colours and set options like transparency.

Open Settings and click Personalisation. Select 'Themes' on the left then 'Theme settings' on the right. A new window opens that displays the installed themes. This hasn't changed for

years, but that doesn't mean there isn't anything new. Click 'Get more themes online' and Edge opens the Microsoft website on the themes page.

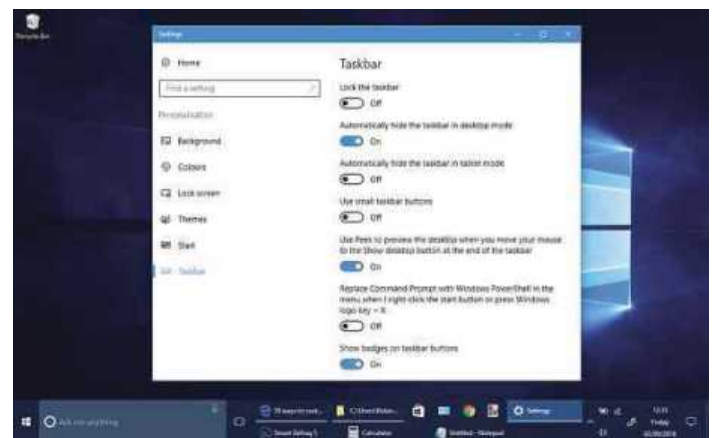
At the bottom of the theme categories list is 'Compatible with the new Windows'. Click it. There are dozens of amazing themes, including wildlife, countries like UK, Australia, Africa, Egypt, and popular games and movies such as Halo and Harry Potter. Click a download link, click the file afterwards and select the new theme.

Back in Settings > Personalisation, select 'Colours' and clear 'Automatically pick an accent colour from my background'. This stops the taskbar and Start menu from changing colour when the desktop image changes. Alternatively, clear the tick next to 'Show colour on Start, taskbar and Action Centre'. They will always be dark grey instead. Also here is an option to make Start, taskbar and Action Centre semi-transparent. Some people like it, but others don't.

5 Default Apps

Installing Windows 10 and upgrading to the Anniversary Update changes file associations and the default applications are reset. You will probably want to change some of them so that clicking a certain file type opens it in your favourite application. Open Settings, click 'System' and select 'Default apps'.

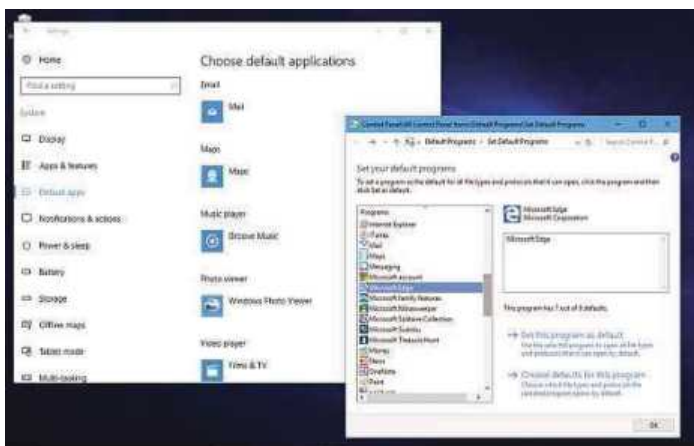
Down at the bottom below this list is 'Set defaults by app' and clicking it opens Set Default Programs in the Control Panel. It's a more powerful tool for changing file associations. A list of



▲ Customise the taskbar and choose small/large icons, labels and more



▲ Get a great new theme for the desktop. This is Beauty of Britain



▲ Choose which app to use by default when a file is clicked in Explorer

programs is displayed and one can be selected, then if you click 'Set this program as default', it makes it the default for all file types it can handle.

For example, if you selected a photo editor, it could be set as the default for all image types, but click 'Choose default types for this program' and you can set it on a file-by-file basis. For example, you could set one photo editor to handle .jpg (like photos) and another to handle .gif images (such as animated GIFs for the web). It's up to you how you set the associations and everyone is different and has different software on their PCs.

6 Lock Screen Options

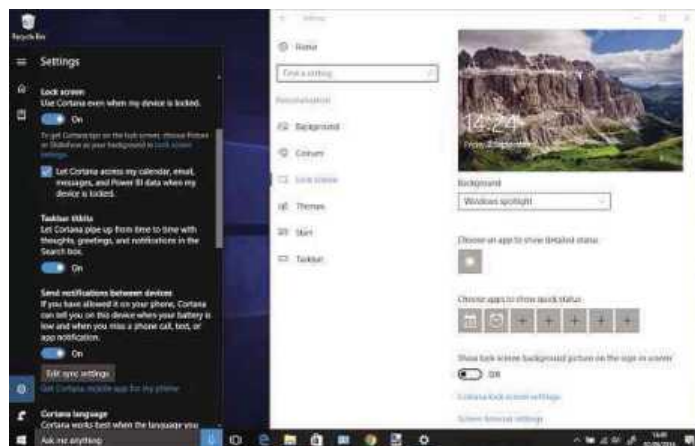
The lock screen is the first image displayed after switching on the computer. It's also the screen if you lock your computer with Windows+L or log out. It displays images, information from apps and tips, and you can choose what to display. Open Settings > Personalisation > Lock screen.

Use the menu to select the background image for the lock screen. For example, select 'Windows Spotlight' to see a different photo every day. The images are similar to the background images shown on the Bing home page and are often amazing. Could Microsoft slip in an advert here? Some people have claimed they've seen them, but there's little evidence. Select 'Picture for the background' and you can select one of the theme photos or select a photo of your own by clicking the Browse button.

Some apps can display information on the lock screen, such as Mail, Messaging, Calendar, Weather and others. Click the plus tiles and select the apps you want to see. bear in mind that other people can see the lock screen. Generally, though, it does not display private information, so it might list the number of new emails, but it won't show the subjects and senders.

Press a key or the mouse on the lock screen and you are prompted to sign in. There's an option to use the lock screen image on the sign-in screen or a plain background. Set it to suit your preference.

Near the bottom of the lock screen settings is 'Cortana lock screen settings'. Click it and you can choose whether to allow Cortana to be used on the lock screen. It can be used to get weather forecasts, news updates, sports scores and a variety of other things without unlocking the computer. This can be useful for other people in the home or office that might be around when you are not. It doesn't appear to show private information and if you ask Cortana to show your email for instance, it requests that you unlock the computer by signing in with your password first.



▲ Choose the apps, image and Cortana features for the lock screen

7 Pin Folders

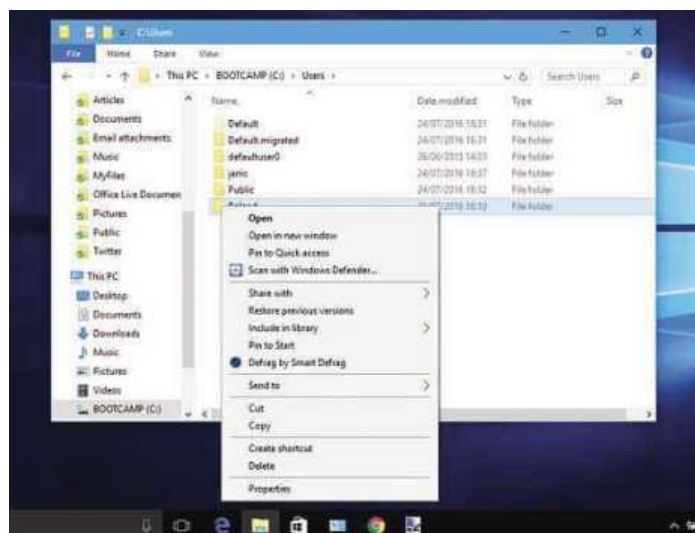
The Start menu was resurrected in Windows 10 and has been improved in Anniversary Update. Yet, even with the improvements, it's still useful to pin your most used programs and folders to the taskbar. When a program is running, its icon appears in the taskbar. Right-click it and select 'Pin to taskbar'. Another method is to click Start and browse the apps list. Right-click any item and select 'More' then 'Pin to taskbar'.

Adding a program icon to the taskbar not only makes it easy to start. Right-clicking the icon displays a jump list, which is a menu of useful commands or recently opened files. With Chrome and Firefox, for example, right-clicking the taskbar icon enables you to open an incognito or private browsing window directly without having to open a normal window and access the menus.

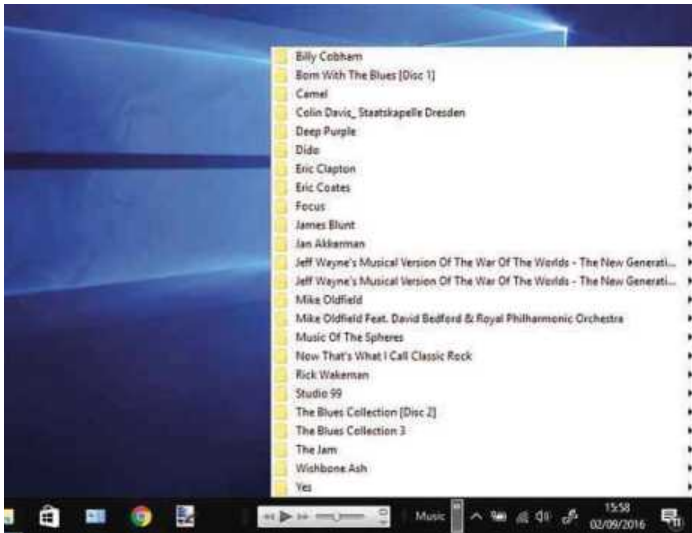
Folders can be pinned to the taskbar, but in a different way, Right-click any folder in Explorer and select 'Pin to taskbar'. It's not added as an icon but to the Explorer icon's jump list. Right-click Explorer in the taskbar and any pinned folder can be opened with one click. The pinned folders are the same as the folders in Explorer's Quick access panel. Whatever you add or delete from here is reflected in the jump list. Add your most used folders.

8 Add A Toolbar

Toolbars can be added to the taskbar and they can take several forms. Some programs are able to create taskbar toolbars and iTunes is one example. Right-click the taskbar and



▲ Pin programs and folders to the taskbar and use jump lists



▲ You can add folders to the taskbar as toolbars, as well as controls for applications like iTunes and Groove

select Toolbars > iTunes. Nothing appears to happen, but run iTunes and select a playlist or album and begin playing. Minimise iTunes and instead of a taskbar icon, an iTunes mini controller appears in its place. It enables you to pause, play jump to the next or previous track and more. There's no need to open the full window.

Groove Music doesn't add a toolbar, but when it's minimised it shows a thumbnail with play controls when the mouse hovers over the taskbar.

Right-click the taskbar and select Toolbars > Links. At the right side are Links and a small double-headed arrow. Click the arrow and Edge bookmarks appear as a menu, enabling you to open Edge and go to any site with one click. An address box into which website URLs can be added in a similar way.

There's also an option to create a new toolbar. This turns folders into taskbar menus. Select the menu option and Explorer opens. Select the Downloads folder for example, and Downloads appears at the right side of the taskbar. Click the arrow next to it and the contents of the Downloads folder appears as a menu. This is a handy way to access downloaded files without having to open Explorer and navigate there.

9 Registry Tweaks

In an earlier tip, we looked at altering the theme, colour and transparency options. If Start, Taskbar and Action Centre are set to be semi-transparent, it's possible to select one of two levels of transparency with a registry tweak. Press Windows+R and enter Regedit. In the left pane go to HKEY_LOCAL_MACHINE \SOFTWARE \Microsoft \Windows \CurrentVersion \Explorer \Advanced.

Right-click an empty space on the right and select New, 'DWORD (32-bit) Value'. Name it 'UseOLEDTaskbarTransparency' then double click it and set the value to 1. Restart Windows and the taskbar will be extra transparent. When it's set to auto-hide and it pops up over the bottom part of a window, it shows more of what is underneath. Set the value to 0 or delete it to return transparency to its normal value.

Click the speaker icon at the right side of the taskbar and there's a new volume control. Is it better than the old one? Compare it and see. Press Windows+R to open the registry editor and go to HKEY_LOCAL_MACHINE \SOFTWARE \Microsoft \Windows NT \CurrentVersion. Right-click CurrentVersion and select New, key. Name it MTCUVC and select it afterwards. Right-click the empty space on the right and select New, 'DWORD (32-



▲ This registry hack turns back the clock on the new volume control

bit) Value'. Name it EnableMtcUvc. Restart Windows and click the taskbar speaker icon to see the old control. Right-click that key you created and delete it to return to normal.

10 Top Taskbar Tweaks

The ultimate tool for customising Windows 10's taskbar is 7+ Taskbar Tweaker (rammichael.com). The 7 in the name makes it sound like it's a Windows 7 tool, but it works with every version from 7 up, including 10. The Anniversary Update has changed the way Windows works and a new version is necessary to make all the tweaks fully compatible. Currently, there's an alpha version for the Anniversary Update in which many, but not all, tweaks work. It might be finished by the time you read this.

There are numerous tweaks available in the package. For example, there's the option to show a jump list or a standard window menu when icons in the taskbar are right-clicked. When dragging files to the taskbar the default is to pin them, but you can choose to open them instead. You may not have noticed, but the pinned icons in the taskbar are quite spaced out. This is noticeable on laptops with small screens and the taskbar is soon filled. There's a tweak to remove the extra gap between icons, which enables more icons to be pinned. There are many options for grouping and combining icons on the taskbar, and you can choose what happens when it becomes crowded with open programs and windows. mm



▲ 7+ Taskbar Tweaker offers many tweaks and settings for the taskbar

Remembering... Friends Reunited

We fondly recall lying about how successful we were...

When Julie Pankhurst was housebound from a particularly rough pregnancy, her husband, Steve, a freelance developer, decided to create a web portal so she could keep in contact with friends and family.

As more friends started to use the portal, Steve and Julie began to think how the site could grow into something more useful, a UK take on the already popular Classmates.com from the US, a site that enabled old schoolmates to get in touch.

We are, of course, talking about Friends Reunited, a site that allowed us to get back in touch with long lost friends, before Facebook redefined the world of social media. Thanks to Friend Reunited, we could use our dial-up connections to see what had happened to that lad who was the most popular in school, or that girl we once had a crush on.

Friends Reunited was also a sneaky yardstick to measure one's success against those who we really didn't like all that much back in school. It was used by both former pupils and teachers, the latter bearing the brunt of considerable years' pent up ire from one or two pupils. It was also quite controversial in its day, resulting in many, often daily, news reports of users hooking up with former romantic partners and leaving their current spouse.

Marriages were wrecked, relationships put under considerable strain, and tens of millions of pounds were made from advertising and sign-up fees. It was a millennial success story, one of the biggest UK dotcom millionaire-making enterprises ever.



▲ Friends Reunited was the UK Facebook of the new millennium

Its History

Conceived by the Pankhursts and close friend Jason Porter, Friends Reunited opened its virtual doors to the public on 30th June 2000. By the end of 2000, the site boasted several thousand members, and by the following year, after a slew of TV and other media advertising, it had increased to several million.

2005 saw the site's userbase hit 15 million, with thousands of users signing up every day. This amount of revenue didn't go unnoticed, and ITV bought Friends Reunited for the grand sum of £175 million, netting the Pankhursts a personal fortune of around £30 million.

At roughly the same time, though, Facebook was released to the rest of the world after a successful tour of duty in the US. The effect on Friends Reunited was quite dramatic, with the user base dropping by 50% in the first year after Facebook's UK launch, and decreasing by the thousands daily.

Due to the dwindling numbers, ITV sold Friends Reunited to Brightsolid Limited, a subsidiary of DC Thomson – which runs the *Beano*, the *Dandy* and so on. Brightsolid Limited moved Friends Reunited to its collection of genealogy sites, until a breakup of the company in 2013, when Friends Reunited was essentially dropped and sent to live in the dusty reaches of the company's server room.

Did You Know?

- At its height, Friends Reunited had over 24 million users.
- ITV sold it for a huge loss to DC Thomson – for £25 million, after paying £175 million for it just four years earlier.
- You used to have to pay to contact users on the site – a service that was eventually dropped to help boost user numbers.
- Some school entries had a 'lively' collection of users: St Bernard's RC High School, Barrow-in-Furness, I'm looking at you!

By the end of 2014, DC Thomson was asked to come back and try to breathe some new life into the site. However, the damage was done, and the number of users that were left were so few and the details so out of date that it was decided to put the site to bed.

On 18th January 2016, Friends Reunited was eventually closed down. The site promised to contact as many former users as possible to provide a link to download their pictures and profiles. Out of the ashes of Friends Reunited, though, comes Liife, a current beta site for you to plot key moments in your life and share them with friends and family. [mm](#)



▲ The original site, as it looked in August 2000

Linux: From A-to-Z

David Briddock continues the series with the letter C

This week's topics are the command line, the C language, source compilation and the 'cat' command. So let's take another dive into the deep waters of Linux, shall we?

Command Line

In the early days of UNIX, all interaction took place through a keyboard-driven character-based interface known as the command line. Keyboard-typed instructions were sent to the underlying operating system and results appeared on text-only monitors. The small, pioneering band of UNIX hackers created a rich collection of commands, utilities, and tools to maximise command line interface productivity. They also devised clever scripting techniques, like the ability to create a 'piped' command chain to pass the output of one command to the input of a different command via the '|' character.

“ The low-level kernel software in UNIX and Linux operating systems are written in C ”

The command interface tradition continued into the home computing revolution in the form of the immensely popular Commodore 64, Sinclair Spectrum, and BBC Micro. These days almost every operating system has a graphical user interface, or GUI, but under these graphical covers every Linux system still retains the command line.

C Language

The C language emerged in the early 1970s, at the now legendary Bell Laboratories. Created by Dennis Ritchie it was based, unsurprisingly, on the B language devised by his colleague and fellow UNIX developer Ken Thompson.

In 1978 Brian Kernighan teamed up with Ritchie to produce the first edition of the 'The C Programming Language' book. Referred to as 'K&R', it soon became the reference bible for C programmers. A second edition defined the ANSI C standard.

The C language had a powerful influence on the programming landscape. The low-level kernel software in UNIX and Linux operating systems are written in C, as are many user apps, system programs, utilities and tools.

Dennis Ritchie died in October 2011, but his C language legacy lives on. Many popular languages incorporate C-like symbolic representations and syntax characteristics including Java, JavaScript, PHP and Perl.

Compile From Source

A key attraction of open Linux software is that there's full access to the source code. That means anyone can make changes for their own personal use, for commercial advantage, or to benefit the wider Linux community.

The open source philosophy allows developers to support different hardware platforms, a process that's called porting. Also, they are free to add new features, update apps, enhanced performance or fix bugs.

Any changed code needs to be compiled into a CPU-specific executable form. Typically all the necessary compilation scripts and configuration files already exist. However, they might need to be tweaked, especially when porting to new platforms.

Cat Command

The 'cat' command, which is short for concatenate, is straightforward to use. Yet when applied to either a single file or a list of files it extremely useful.

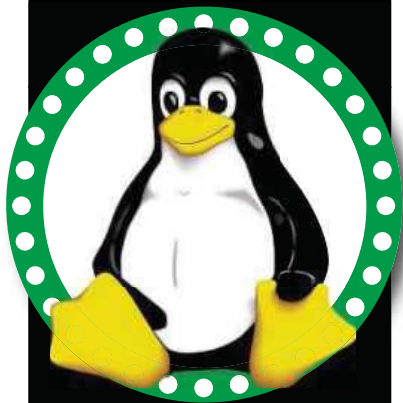
In its simplest form 'cat' displays the contents of the file (or files) to the display, but optional parameters mean the output can be filtered. For example, the '-v' option displays normally hidden, non-printing characters, while the '-n' option adds line numbers (useful for shell scripts and program source code).

Other command line tricks offer further flexibility. By using the Linux '>' redirection symbol the filtered contents can be used to generate a new file, for example, and the cat command is often employed in a piped command chain – to process the output of the 'sort' command, for instance. [mm](#)

```
#include <stdio.h>

int main(void) {
    printf("Hello, world!\n");
    return 0;
}
```

▲ C Hello World code



David Hayward has been using Linux since Red Hat 2.0 in schools, businesses and at home, which either makes him very knowledgeable or a glutton for extreme punishment

Linux

Scribus 1.4.6 - Better DTP Than Ever Before?

Scribus improves in leaps and bounds

Scribus has been the poster-boy for open-source desktop publishing software for quite some time now. Despite more recent additions, such as LibreOffice, that cropped up over the years, there has been a close-knit community of developers, testers and users who have helped hold the Scribus flag high and kept it going through the ever-changing software climate.

The newest release, Scribus 1.4.6, is, to all intents and purposes, purely a bug-fixing solution. However, there are some notable improved features included that signify a potential turning point for this greatly matured program.

First off, though, the bug fixing team has been hard at work filling in the gaps found and submitted by the community. The user interface has been spruced up slightly and problems regarding multiple image importing, undo and redo fixes, and ghost entries in the Outline window have all been resolved and closed off.

Other fixes such as the Autoquote script have been rewritten and further enhanced to provide more options, and the Barcode plug-in has been updated to better reflect some of the new features that the team have implemented since the 1.4.3 update a couple of years ago.

Of the new features, the likes of PDF/X-1a export, various

scripts, better support for Windows 10, a new colour palette for professional geographers and improved page borders that now act as guide lines, make for a more rounded and suitably enhanced experience for the current Scribus users. However, one of the more significant additions is the implementation of the latest version of the CMYK colour set, as created and recommended by the Newspaper Association of America. This means, of course, that Scribus is one of only a few publishing software packages that now provides the latest version of the official NAA colour set – a credit that's certainly going to improve its prospects and hopefully improve the overall userbase.

More Mature

For most home users, the official NAA colour set isn't something they'd normally get excited about – unless they have a specific need, that is. What the casual user receives through the 1.4.6 update is a far more stable program that's committed to improving itself.

There have been some problems in the past, where trivial things have caused frequent crashes. Spell checking, XPS import, importing .ODT files and even changing preferences have triggered a fatal crash. Thankfully, though, version 1.4.6 has managed to plug the leaks, and from what we can see, has also managed

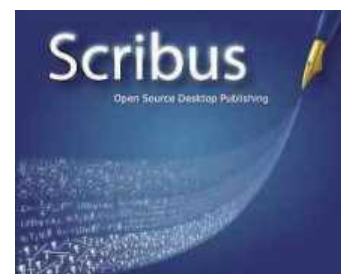
to improve the performance of the program.

The load times and interface certainly feels a lot snappier than previous versions, and moving images around the page doesn't feel like you're wading through treacle or waiting for the graphics of the ZX Spectrum version of *The Hobbit* to load line by line.

We did like the new features, and the fixed bugs certainly made for a better and less frustrating experience than before. But even with these new additions, is it enough to catapult Scribus from the back of the line to the forefront in this world of more office-led programs?

Admittedly, we haven't used Scribus for some time, because other publishing software has taken over. With the newfound stability and improvements in performance and features, though, we think Scribus could well be entering a new phase of appreciation from both casual and professional users.

▼ *Scribus is maturing and ever evolving into a more competitive product*



Apple: We Need To Talk About iCloud

The cloud sync/storage system is increasingly important - but also increasingly expensive and unreliable



We're told the future of storage is the cloud, and giants of the tech industry are making their plays. But the approaches being taken are very different. Amazon recently adjusted its offering to make storage unlimited, for £55 per year. Apple, meanwhile, is baking iCloud sync deeper into its operating systems but expecting you to pay for the convenience: a new 2TB tier of storage will set you back a whopping £167.88 per year; a 1TB option remains available, at a still pricey £83.88.

On the face of it, Apple has a good shot of winning out with people who own Apple products, purely on the basis of ease of use. Flick a switch and everything just works. At least, that's the theory. The reality could be markedly different.

iCloud has a tendency to be twitchy. I find Calendar events sometimes vanish or revert to pre-content states shortly after entry. iTunes Match, for which I paid £21.99, refused to match/upload half my music collection. Workarounds to deal with the issue are convoluted and didn't actually fix things. (Far be it for Apple to provide an option to 'rematch' an album or selection in iTunes. That would be too easy.)

I suspect iTunes Match flaked out not long after I first turned it on. Back then, my internet connection's upload speed was slow, and iTunes Match likely got interrupted a lot – and Apple web services have never been robust regarding resuming connections. Albums I've bought since have a better 'match' success rate. But all this makes

me concerned about macOS, which offers during setup to sync your entire Desktop and Documents folders.

If you only work with tiny text documents, this should be fine. But I shudder to think of how macOS and iCloud will deal with massive media files from Photoshop users and audio/video creators. There's no granularity: the feature is on or off. It's ridiculous that you can't exclude specific folders, which you know might cause problems.

Also, how many Mac users will blithely turn this feature on and realise they've within days run out of iCloud space, due to Apple's miserly free tier (5GB across all devices) and still fairly tight lower paid tier (50GB for 79p, monthly)?

I wonder how many of Apple's decisions about iCloud stem from executives with so much money £13.99 per month is nothing to them, and from engineers with lightning-fast internet connections who don't realise there are poor sods sitting in rural areas battling with half-meg broadband (or worse).

It's hard to know what the solution is. We certainly

shouldn't expect everything for free, and yet Apple risks splitting its users when it comes to the cloud. Worse, plenty of people simply stop backing up the second iCloud says they're out of space. This means they have a shiny Apple device and an *expectation* all will be fine, before receiving a harsh dose of reality when said device is lost and no backup exists.

At the very least, Apple should rethink its free tiers and 'reward' hardware purchase loyalty. If you've bought three iPads and two iPhones, would it really kill Apple to give you 25GB of iCloud space for free, rather than just 5GB? And when you do splash out for a paid tier, that should be over and above free space, rather than replacing it.

Mostly, though, I'd like Apple to be more competitive with online storage, and allow more control regarding how your data is dealt with – in everything from new macOS features to iTunes Match. But that doesn't feel very Apple.

▼ *2TB: a bargain at – Actually, no, it's not a bargain at all*



Craig Grannell is a writer, designer, occasional musician and permanent loudmouth. He's owned Macs since 1996, when Apple was facing certain doom, and is therefore pleasantly surprised by its current success. Find Craig on Twitter at @craiggrannell

Mac



Seconds Generation

Ian McGurren looks at Apple's latest smartwatches

Ian is a professional IT analyst, a semi-professional writer and a pretty amateur electronic musician. He likes gadgetry and loves making gadgets do things they were never designed to do

Mobile

It's a funny lot for the Apple Watch. Released in a blaze of long-awaited glory, that blaze soon turned to a fizzle when people realised the idea of wanting a smartwatch was more exciting than actually owning one. To be fair to Apple, it wasn't just its smartwatch that floundered; so did the Android Watch devices, Samsung's Tizen watches, and pretty much all of the rest. What did prosper on the end of the arm, however, was fitness trackers, with the world and its dog deciding it was imperative to not only track their day's activities, but also share socially in a way that was definitely not bragging. So it comes as no surprise that Apple's second generation of its Apple Watch smartwatch – or Series 2 – leans heavily on the fitness aspect.

But first things first. Has Apple, like most wristwatches, finally gone round? No. In fact, to look at, there's little to show that you're wearing a second-generation device other than if you're wearing the forthcoming ceramic white version or happen to be viewing the screens side-by-side in a low light (the new one is twice the brightness). There are a plethora of new straps too, but those can also be used on the first generation.

There are some changes, though, some practical, some technical. The standout feature is waterproofing to 50m – something becoming a standard on phones, but the previous Apple Watch was only splash proof. Waterproofing means the

Apple Watch can now become – yes you've guessed it – a serious fitness tracker. So serious in fact that Nike is introducing a rather brightly coloured range of Nike+ themed Apple Watches, picking up the baton from the Nike+ hardware that's supported Apple devices for over ten years. Apple made a point of emphasising just how much work went into the watch's analysis of a swim in order to deliver accurate and usable data, including calories burned. With most current swim trackers having a very basic display, if one at all, this is a huge boon for those who take swimming – and fitness in general – seriously. There's even a special water-expelling speaker.

Inside things have also changed, with the battery growing 1mm in thickness and receiving a longevity boost. There are also two other important additions another core and GPS. The second core had been rumoured and, as expected, it boosts the performance of the watch (along with the updated watchOS 3), with apps also loading much quicker.

GPS, again a phone standard now, can now give owners the freedom to not have to cart their smartphone with them when out and about (very useful if you're an owner of a Plus model of the iPhone). You can still sync up to 2GB of music too, so all you need for a long run now is the Apple Watch and a set of Bluetooth headphones.

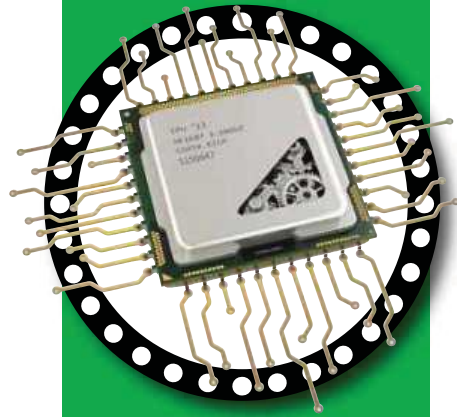
Finally, a second watch has actually been released too... Let me explain. Apple has decided to

call this new generation 'Series 2', but instead of retroactively renaming the previous-generation devices 'Series 1', it's taken that device and upgraded the CPU to match that of the Series 2, then called this new hybrid device the 'Series 1' (nothing else has changed, though – still no GPS or waterproofing). Presumably the first ones are 'Series 0'?

The second-generation devices are often the devices the first should have been, and it's pretty fair to say that here. The addition of GPS and waterproofing finally gives the Apple Watch a good reason for buying it, something missing before, though it remains to be seen if it's of use to anyone not heavily into personal fitness. One barrier, however, may be the cost, because this latest clutch of Apple devices are the first released with pound sterling faring much worse against the US dollar. You might not be shocked to see the pound price reflect the dollar price, but your bank account may well do. The Apple Watch Series 2 starts at £369, and the Apple Watch Series 1 starts at £269. Both should be available by the time you read this.



Nvidia Announces Single-Processor Drive PX 2



Nvidia shrinks its driving-focused AI hardware to boost its adoption by auto manufacturers

I've been following Drive PX automotive tech since it was announced, as it's one of the most exciting developments in computing, on account of it fusing artificial intelligence research and software engineering with hardware engineering to help create the self-driving, super luxurious and intelligent cars of tomorrow. Every year, the Nvidia tech steps up a notch. This year has been no exception. In January, Nvidia announced the Drive PX 2, a computer capable of 24 trillion deep learning operations per second. Nvidia said that Drive PX 2, "utilises deep learning on Nvidia's most advanced GPUs for 360-degree situational awareness around the car, to determine precisely where the car is and to compute a safe, comfortable trajectory."

Now, Nvidia has announced another slab of next-level autonomous driving goodness, which takes the form a palm-sized version of the Drive PX 2. This new version of the Drive PX 2 uses a single processor rather than two processors, as is found

in the regular Drive PX 2. The processor in the new, smaller Drive PX 2 also makes use of Nvidia's Pascal architecture, just like the processors used in the regular Drive PX 2. Remarkably, the new Drive PX 2 draws just 10W of power.

The new, single-processor Drive PX 2 is designed for use in automated 'highway driving' and HD mapping roles, and Nvidia says that a car using the Drive PX 2 can understand what is happening around it in real time, "precisely locate itself on an HD map and plan a safe path forward." It's designed for "auto-cruise", which involves the car safely taking control of itself on the road, rather than the kind of full autonomous driving that's designed to pick you up, take you somewhere, such as a restaurant, and then drop you off.

The new Drive PX 2 configuration will be used by Chinese company Baidu to power a self-driving motor. Indeed, Baidu and Nvidia recently announced that they would partner to create a cloud-to-car system that would



combine Baidu's cloud and mapping know-how with Nvidia's self-driving tech (tinyurl.com/h3yftqg).

This slimline Drive PX 2 is surely a tasty prospect for car manufacturers who want to provide some form of autonomy in the very near future. Cars with assisted parking technology that help drivers park in tight spots are becoming ever more prevalent, so hopefully this new device will usher in even greater driving assistance. Even the ability to take over from a driver who's inadvertently fallen asleep on the motorway and safely manoeuvre the vehicle along the carriageway would be a great boon and could save many lives.

I can't wait to find out what's next. As for this unit, it'll be shipping to Nvidia's partners in the automotive industry next quarter. More information on Nvidia's Drive PX 2, as well as Nvidia's DriveWorks autonomous driving software development kit and DGX-1 deep learning computer, can be found at www.nvidia.com/drive.



Andrew Unsworth has been writing about technology for several years, he's handy with a spanner, and his handshaking skills are second to none

Hardware



Ryan Lambie has loved videogames since he first stared up in awe at a *Galaxian* arcade cabinet in his local chip shop. 28 years on, Ryan writes about gaming for Micro Mart. He's still addicted to chips and still useless at *Galaxian*

21st Century Fox

A tiny fox in a big world: Secret Legend is an isometric action adventure that mixes ideas from Zelda, Fez and Dark Souls. We can't wait

This week, Ryan takes a look at a charming isometric indie game with a fox in it, and a forthcoming MMORPG set in a persistent universe...

Plug & Play

Long before the modern age of tutorials and 'Press X to duck' screen prompts, there were games that seemed to revel in their sense of mystery. With only the most basic instructions to guide you – often in a small printed manual or a few words on a cassette inlay – some games actively encouraged you to experiment, explore and generally figure things out for yourselves. The forthcoming indie action adventure *Secret Legend* feels like a throwback to those old games; its design is clearly modelled on the original NES version of *Zelda*, but it also brings back memories of such classic isometric computer games as *Head Over Heels*, *Knightlore* and *Ant Attack*.

As lone creator Andrew Shouldice puts it, *Secret Legend* casts you as a "tiny fox in a big world" – and what a sumptuous-looking world it is. Built from flat, colourful polygons – all cubes and pyramids – it feels at once retro and completely modern; you begin near a sun-drenched beach, but soon venture into a network of ancient-looking buildings and caves. With a completely empty inventory, it's up to you to hunt around for something you can use as a weapon against the aggressive

blobs and giant spiders roaming the landscape. Rummaging through treasure chests eventually yields a stick; hunt around a bit more, and you'll eventually find a sword. With the few on-screen prompts written in an opaque language, *Secret Legend* feels like a game beamed in from another dimension – even the controls are explained in an oblique way, with pages torn out of a game manual lying around the landscape, waiting to be discovered.

The basic mechanics behind *Secret Legend* appear to be familiar enough, though: explore, collect items that will make you powerful enough to fight the enemies in the next area, and repeat. Shouldice's game is designed with such freshness and charm, however, that it somehow looks and feels greater than the sum of its influences. Like such games as *Fez* and *Shovel Knight* before it, *Secret Legend* nods to the past while taking in the kinds of design ideas and polish that couldn't have been achieved on the computers and consoles of the 80s and 90s.

What's most impressive about *Secret Legend* is that it's been put together by just one developer using the Unity Engine; the use of colour and lighting in the game makes

it look far more grand and expensive-looking than you might expect for such a tiny project. After its demo made an appearance at PAX West, *Secret Legend* is now starting to get the attention it deserves. Due out next year, it's already become one of our most anticipated indie games.

You can keep up to date with *Secret Legend*'s development at www.secretlegendgame.com.

Online

The danger, when building a huge virtual universe, is that it can all start to feel a bit empty. Sure, you can fly from planet to planet, harvesting resources and spotting strange new life forms, but what then? That's one of the major criticisms commonly levelled at the eagerly anticipated *No Man's Sky*: a game with a vast sense of scale and also, for some players, a grinding sense of repetition. With little reason to revisit the planets you've already discovered and no other human players to share the universe with, it all starts to feel a little lonely.

While *No Man's Sky*'s technical achievements are hugely impressive, particularly for a relatively small indie game, one of its possible flaws is the



▲ A persistent online universe, a player economy, ship and city building... MMORPG *Dual Universe* promises to be a detailed sci-fi game on a par with *EVE Online*

lack of connection between player and planet; sure, you can mine and explore and carve up rocks, but each planet is a simply a place to explore rather than an environment you can build on and call home. What if you could actually build your own towns and cities before you blasted off into space? What if you could collaborate with other players to build an entire civilisation before journeying off into the stars? With a greater connection to your home soil, maybe journeying to other planets would take on more of a sense of occasion.

This is something French developer Novaquark aims to introduce in *Dual Universe*, a sci-fi MMORPG looking for backers on Kickstarter. A sandbox game where players share a single persistent universe, its voxel-based worlds will, according to the studio, be fully editable by its players. We'll be able to build everything from cities to ships to space stations using a system which looks like a combination of *Minecraft's* block-based construction and *Worlds Adrift's* modular ship editor. Novaquark says there'll be a complex, player-driven economy

where ships, raw materials and blueprints can be bought and sold. There'll be weapons systems and epic player-versus-player space battles. We'll be able to journey to other planets and mine for resources or claim them as our own. In short, *Dual Universe* merges elements we've seen in *EVE Online*, *No Man's Sky*, *Elite Dangerous*, and other space sims and MMOs; the danger of attempting to craft a game containing being that it ends up falling short of its hype or, like *Star Citizen*, takes an eternity to develop.

Novaquark seems open and confident in what it's trying to do, however, and what it's produced so far looks exciting – well-designed, but not so slick that it's making promises that it can't technically pull off. At the time of writing, *Dual Universe* has yet to cross the €500,000 it's seeking; if it can, then Novaquark aims to have its sci-fi MMO ready for 2018.

Find out more on its campaign at www.dualthegame.com.

Incoming

On the subject of Kickstarter funding, you may remember *Bloodstained* – a spiritual successor to the *Castlevania* series from one of its key creators, Koji Igarashi. The gothic platformer flew past its initial \$500,000 goal, eventually hitting \$5.5m – showing the cult following Konami's action series still has. Igarashi's game was due for release in March 2017, but the industry veteran recently told backers that *Bloodstained's* release is being pushed back to the first half of 2018.

"I made this decision to absolutely guarantee the gameplay is right first time," Igarashi said in an update video, adding that he's currently recruiting extra designers to join the game's team of artists and coders. With any luck, the delay will mean *Castlevania* fans get a game that lives up to expectations, particularly given the widespread disappointment surrounding Keiji Inafune's *Mega Man* successor, *Mighty No. 9*. **mm**



▲ Koji Igarashi's spiritual successor to his own *Castlevania* games has hit a delay, with its release pushed back from March 2017 to early 2018

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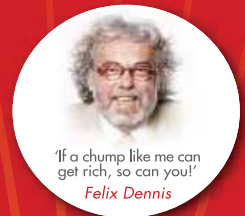
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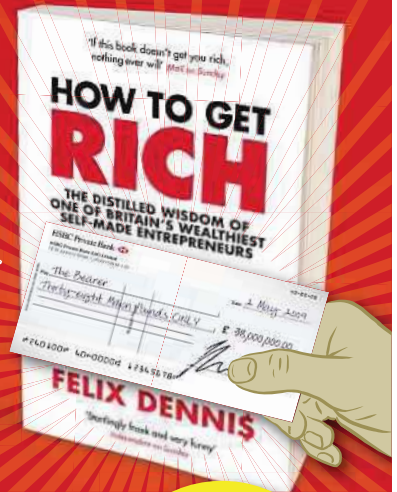
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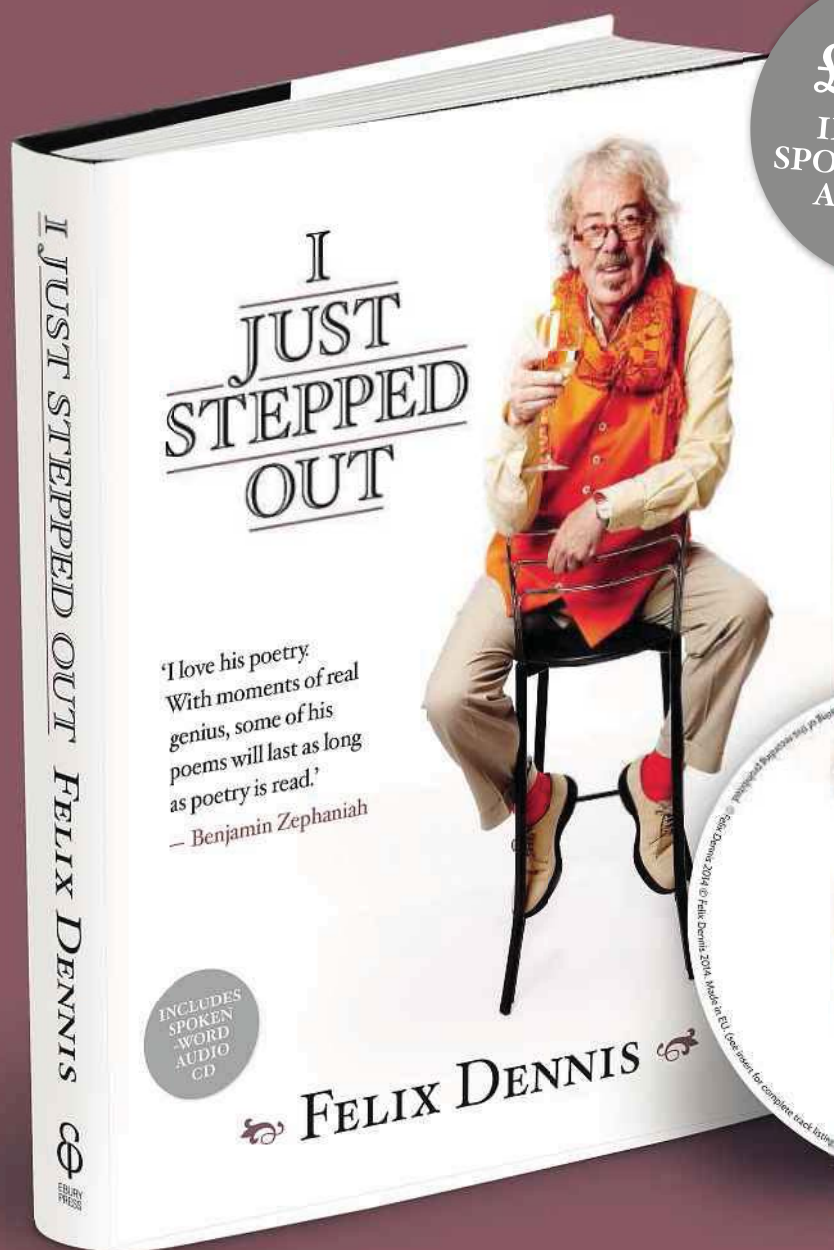
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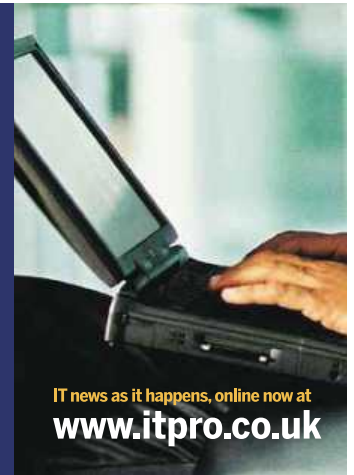
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Aaron

Sharing Samba

Last week my accountancy software supplier told me that the problems I was having trying to upload a file from their program to Companies House were caused by my continuing loyalty to XP, and that I would have to upgrade to 7 or 10.

On the basis of the glowing review in issue 1425. I downloaded Win 10 (English Edition x64 – first mistake) and purchased a licence. It installed (okay, but was the US English version) and had no legacy support for 16-bit programs and, it seems, was not all that good with some of 32-bit ones either.

Now, all my Windows systems are virtual ones sitting on Mageia Linux via VMware. Mageia is running samba and making five shares available. This means that all my data is visible to both Linux and Windows XP.

I had little trouble getting that 64-bit Windows 10 to 'see' and access the samba shares, but I really needed the 32-bit version.

I downloaded that and for the next four days employed every bit of logic and tips on the Internet to try and get it to access those shares.

The 64-bit version works with VMware's shared directories option disabled and for example, the Workgroup (Domain) set up in Mageia's samba is GEORGE and its NetBios Name is AUDREY.

In Windows 10, the workgroup is also set to GEORGE and the Computer's name to WIN 10-X64. Mageia's hostname, by the way, is audrey.george.

I cannot for the life of me get the Win 10 x32 version to connect to the samba shares on Mageia. I would be grateful if you could point me to a solution or a man who might have one.

Alan

This would seem to be an issue with Windows' SMB configuration, something Microsoft knows about and that has been present for a while, even in previous versions of Windows and Windows Server. The problem can usually be remedied by disabling SMB 2/3 and enabling SMB1. Presumably, this is down to a compatibility problem between Windows and Samba.

To do this, and to hopefully make your shares appear within your network in Windows 10, you'll first need to open the Windows PowerShell cmdlet. Do this by simply searching for PowerShell within Windows and clicking on the app when you locate it. Once this is run, you can check the status of the SMB server protocol by running the following:

```
Get-SmbServerConfiguration | Select  
EnableSMB1Protocol, EnableSMB2Protocol
```

Next, to disable SMBv2 and SMBv3 run:

```
Set-SmbServerConfiguration -EnableSMB2Protocol $false
```

Now, with SMB 1 and 2 disabled, you need to enable SMB1. Do this with the following:

```
Set-SmbServerConfiguration -EnableSMB1Protocol $true
```

The effects of this should be immediate, and not need a reboot, but some users have noted that it does actually require a reboot of the machine for the changes to take effect, so I'd do that anyway.

Once you reboot, see if you can see your network shares. If all has gone well, you should have no more problems. Good luck!

```
Windows PowerShell  
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PS C:\Users\Aaron> Get-SmbServerConfiguration  
  
AnnounceServer : False  
AsynchronousCredits : 64  
AutoShareServer : True  
AutoShareWorkstation : True  
CachedOpenLimit : 5  
AnnounceComment :  
EnableDownlevelTimeout : False  
EnableLeasing : True  
EnableMultiChannel : True  
EnableStrictNameChecking : True  
AutoDisconnectTimeout : 0  
DurableHandleTimeoutInSeconds : 30  
EnableAuthenticateUserSharing : True  
EnableForcedLogoff : True  
EnableOplocks : True  
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KeepAliveTime : 2  
MaxChannelPerSession : 32  
MaxMpxCount : 50  
MaxSessionPerConnection : 16384  
MaxThreadsPerQueue : 20  
MaxWorkItems : 1  
NullSessionPipes :  
NullSessionShares :  
UnlockBreakWait : 35  
PendingClientTimeoutInSeconds : 120  
RequireSecuritySignature : False  
EnableSMB1Protocol : True  
EnableSMB2Protocol : True  
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Smb2CreditsMin : 128  
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TreatHostAsStableStorage : False  
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ValidateShareScope : True  
ValidateShareScopeNotAliased : True  
ValidateTargetName : True  
EncryptData : False  
RejectUnencryptedAccess : True
```

▲ Windows' PowerShell is a powerful and useful tool, and it can be used to troubleshoot many problems

Taking The Tablet

Thanks for publishing my letter about my Windows 10 desktop problem. Would you believe that Windows was in tablet mode and all I had to do was unselect it and all was then normal?

Busli

Thanks for the update on your problem. To be honest, I'm not at all surprised that Windows 10's tablet mode was causing the trouble, as I've seen many other people have the same problem. Since Windows 8, the OS has been designed to make the most of touchscreen technology and devices like tablets, so Microsoft has pushed this aspect of its functionality quite hard, to the point where it has actually become problematic for users on occasion, as you've found.

Thankfully, just by deactivating this feature, the problem is fixed, which is good news. Other readers with similar problems should also keep this in mind, and check out details of this and other Windows 10 tweaks on p62 of this week's magazine.



▲ Windows 10's tablet mode can confuse users who don't want the new interface

Slow From The Off

I purchased an all-in-one PC about two years ago. It's one of those models that has the PC built into the back of a monitor, with a separate mouse and keyboard. I wanted this as I thought it would be useful for Internet use and basic stuff, but wouldn't take up a lot of space in my living room. The latter of those two concerns has been addressed, but the first, not so much.

At the moment the PC is very slow and takes a long time to boot up. It's not ready for use until around 10 minutes has passed after turning it on, and even then it's not exactly a speed demon. Then again, I remember I was more than a little disappointed not long after I bought it.

I'm not running anything major on it, such as games. All I'm doing is using the Internet, watching YouTube and other basic things. I doubt it should really tax the system, but it does seem to do so, and my time using it is spent in frustration as I sit there waiting for something to open or a page to load.

I'm not sure if the sluggishness is because of my Internet connection, which is a 10MB broadband package, or if it's the system.

Ian

I'm not privy to the specification of the PC you have, but as it sounds like a small form factor system, which are often used in all-in-one devices similar to the one you describe, I'm not surprised at the relative slowness you're experiencing as these

are often somewhat lowly in terms of the quality and speed of components. Also, depending on the price of the unit, the components used inside will vary, and if it was a cheaper model, the speed you'll get will be limited.

I suspect the system you have is one of these fairly low powered models, and that your broadband connection isn't the problem here. The boot-up time, for example, will have nothing to do with the broadband connection. 10 minutes is at the fairly extreme end of waiting time, though, even for a low-end model.

You say the PC was slow to begin with, but the lack of speed has now become much more noticeable. This could be down to the usual bloat a PC can begin to suffer from after prolonged use. To combat this, and to gain some much-needed speed back, simply run Windows hard disk clean-up tools and clean out any unwanted files. Uninstall unwanted programs too, and clear out your Internet browser cache.

You should also open up the Task Manager and trim down the system startup, removing anything you don't use. This is one of the biggest causes of system slowdown, especially during boot up, and you can often gain back a lot of speed with just this tip.

Up to date versions of Windows are now very good at organising hard disks, but I'd still try running the disk defragmenter as this could give you another small boost in performance. Do so even if Windows says the volume

doesn't need to be defragmented, but do this only after you've done both of the above steps, otherwise the defrag won't be as effective. Also, don't do this all the time, as too much defragging can be unhealthy for the hard disk (N.B. you should never defrag an SSD).

If all else fails, you could always perform a format and reinstall of Windows, or run your system's factory reset/recovery tool. Either of these options will wipe the system and reset it to a clean, brand new state. After that, it should run as well as it ever will barring any hardware problems.

▼ Windows' disk cleaning tool can be a big help if you need to get some performance back



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Jason

Monitoring The Situation

I'm a gamer, and I've just bought a 28" 4K monitor to replace my 23" 1080p model. In general, my PC's still pretty good – Core i7-4770K, Asus Z97-chipset motherboard, 8GB of DDR3-2666 RAM, 512GB SSD – but the weak point is the graphics card. It's a GeForce GTX 750 Ti. This was fine at 1080p, but I need something much better for 4K.

I've been following the launches of Nvidia's 10-series cards, and I'm drawn to the GeForce GTX 1060. From what I can tell, going by the name and the price, this is meant to replace the GTX 960, yet it seems to beat even the GTX 980. I know it's VR-capable, but is it also up to 4K? I'm on a pretty tight budget.

T Rogers, Derbyshire

At heart, the GTX 1060 is half of a GTX 1080, or two-thirds of a GTX 1070 (which is three-quarters of a GTX 1080). Now, this would suggest the GTX 1060 is only 50% as fast as the GTX 1080, but it's actually more like 66%. As ever, the higher up the ladder you climb, the

less the view improves. The law of diminishing returns. The GTX 1060 certainly hits the sweet spot.

However, this only applies at 1080p (1920 × 1080) and to some extent at 1440p (2560

the 6GB GTX 1060 has 1,280. The 6GB card, on which the assessment in the first paragraph is based, performs 10% or so faster, though sadly it's also around £50 more expensive. A good alternative

“ The GTX 1060 is indeed at least as fast as the GTX 980 ”

× 1440). Sadly, the GTX 1060 doesn't fare too well at 2560p (3840 × 2160) – that is, 4K or UHD. Frame-rates regularly dip below 30fps, though dialling down a game's settings can help. But where's the fun in losing detail just to get the pixel-count up?

Ideally, a GTX 1070 should be your lowest target for decent 4K. Sorry. Expect to pay at least £380, whereas a GTX 1060 can be had for around £190 – half the price, in other words. That's for a 3GB model, mind, not a 6GB model. They're two quite different cards: the 3GB GTX 1060 has 1,152 CUDA cores;

to the 3GB card – similar price, similar performance – is the 4GB Radeon RX 480.

PS – To see some benchmarks, head to this Ars Technica piece: goo.gl/i0IQ2o. As shown, the GTX 1060 is indeed at least as fast as the GTX 980, all while employing far fewer CUDA cores and drawing less than two-thirds of the power. Remarkable.

▼ *Just as AMD thinks it's got the mid-range sewn up with the RX 480, along comes Nvidia with the GTX 1060...*



Carrier Barrier?

I have a Samsung Galaxy S6 Edge. It's on Vodafone but, because of a poor signal at home, I'd like to switch to Giffgaff (O2). On eBay there are sellers offering unlock codes for a little over £10 (the price seems to change day by day), yet my local shop wants nearer £30. Are these cheap codes legitimate? Could my phone possibly become locked again at some point or maybe even blocked? Also, my contract still has six months to run. Is that a problem?

Alex Peters, Gmail

Nothing to worry about here, Alex. You *should* be able to unlock your phone before the contract ends. Ultimately, Vodafone won't much care, as you're still obliged to pay your dues for the next six months. Switching to Giffgaff won't get you out of that, of course. Vodafone will actually save money, as the minutes, text, and data you're paying it for will never be used.

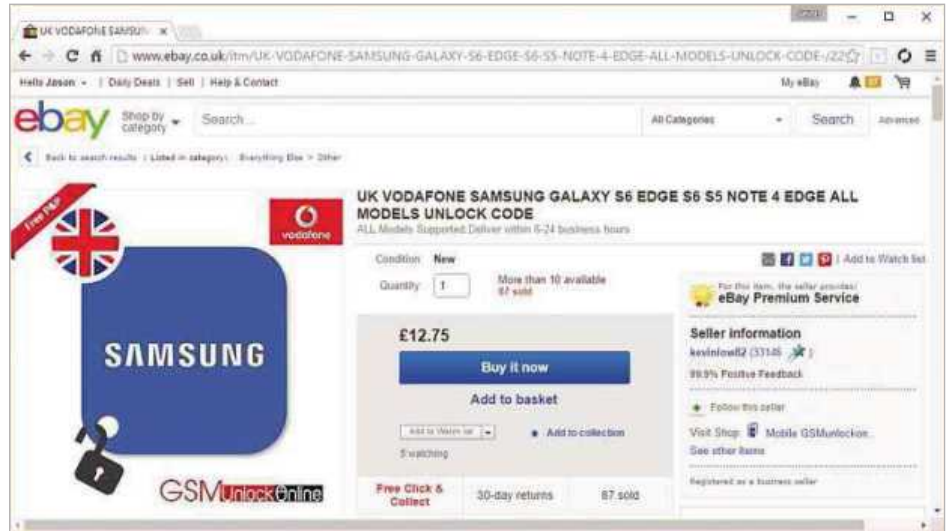
Unlock codes for sale on eBay are quite safe. The sellers pay for access to the databases that list IMEI numbers and the carriers they're authorised to play on. The sellers are charged a fee to reveal a given

IMEI's unlock code. It's all above board. Once a phone's unlocked this way, it stays unlocked – there can be no funny business later on. Online sellers are typically cheaper than shops simply because they don't have the overheads. They're often working out of bedrooms.

If you scout around, you'll probably encounter apps or hacks claiming they can unlock your phone for free. These always require root access and are usually barred

from Google Play. Some might carry a trojan, sneaking in a nasty payload, though in truth most are genuine (but legally dubious). Still, in my experience, even if a gratis unlock works, it doesn't work for long, and there's typically some unexpected side-effect or other. Don't be tempted. Spend a tenner and do it properly.

▼ **Are (relatively) cheap unlock codes legit?**



Scale Tale

I'll soon be building my first PC. It'll be used for office tasks and light gaming. Money's an issue, and for the CPU I've decided on a Core i3-6300 (3.8GHz, dual-core, Hyper-Threading). To save more pennies, I'll also probably stick with DDR3, as I understand both RAM and motherboards are quite a bit more expensive for DDR4. Will I really lose all that much in speed?

Lukas, London

In short, no, you won't. Have a gander at these tests over at AnandTech: goo.gl/cYla5U. At the same frequency and timings, DDR4 wins marginally in some areas and DDR3 wins marginally in others. Unavoidably, the CPU in the DDR4 tests has more cache than the CPU in the DDR3 tests, so if that advantage were removed, the scores would be even tighter.

Of course, DDR4 can scale much higher than DDR3. I think the fastest available DDR3 is DDR3-2600 (PC3-20800), whereas DDR4 currently goes right up to DDR4-4200 (PC4-33600). However, as proven many times in the past, frequency gives precious few advantages after a certain level, at least

in games and mainstream applications. This is shown on another page of the article linked to above: goo.gl/Yp67ss. There's simply no tangible performance difference between DDR4-2133 and DDR4-3200. As ever, timings (latency) are more important than frequency.

Now, while DDR4 isn't a worthwhile upgrade in its own right, Lukas, I'd argue that it's the only sensible choice when building a new PC. Why saddle yourself with end-of-life technology? It'd be like coming home with a VHS copy of your favourite film when you could have bought the DVD for the same money (who buys Blu-rays, right?).

Historically, yes, DDR4 RAM carried a price premium, but it's now reached parity with DDR3. Actually, in many cases, it's cheaper. Looking on www.ebuyer.com as I write this (other tech emporiums are available!), the cheapest 8GB strip of DDR4 costs £30.62 (Crucial DDR4-2133), yet the cheapest 8GB strip of DDR3 costs £33.48 (Corsair DDR3-1333).

You've chosen to go with a sixth-generation CPU (Skylake). That's a good choice, as your LGA 1151 motherboard will also be compatible with the upcoming

seventh-generation CPUs (Kaby Lake). Surprisingly, those chips, just like the sixth-generation jobs, will support both DDR4 and DDR3.

However, going for a DDR4 motherboard won't cost you an ARM and a leg. Once upon a time, maybe. For example, back at www.ebuyer.com, Asus offers two similar boards at the entry level: the H110M-A D3, for DDR3, costing £54.93; and the H110M-A/M.2, for DDR4, costing £55.98. It would be madness to compromise for the sake of £1.05! You can see where I'm going with this, can't you, Lukas? Leave DDR3 to the history books.

▼ **DDR4 isn't really any faster than DDR3, but at least it's now about the same price**



Crowdfunding Corner

One of the big tech stories this month has been Apple's decision to push users towards wireless earphones with the iPhone 7. But if you're averse to paying inflated amounts for Apple's AirPods, here are some alternatives...

BE Bop Buds

If you're going to get wireless earbuds, you might as well get some that can properly impress you, and the BE Bops seem well-poised to do just that. This pair of earbuds plays stereo audio over a Bluetooth connection and come with everything you need for a perfect experience: a protective charging vessel with built-in battery pack that can refill their power three or four times off a full charge; six tips in three sizes to fit small, medium and large ears; ear foils to help keep the headphones in place; and the necessary cables. Not a back package at all.

The earbuds themselves have a power button with LED indicator and an integrated microphone so you can use them to take calls. Simple, one-push operation allows them to pair with one another and then your phone. The three-hour listening time could be a lot better, but it takes just one hour to recharge them, and the battery pack can store up to 12 extra hours.

Although the early bird discounts have also gone, you can currently get a complete set of the hardware for just \$99 (£75) plus shipping, which is well below the RRP of \$159 (£120). Buy two and you get an even better discount.

Units ship in December 2016 or January 2017 depending on what you spend, but either way, it isn't a long wait.

URL: kck.st/2cKTe0E

Funding Ends: Sunday, 6th November 2016

Catalyst Wireless Earbuds

Do those earbuds sound a little basic to you? Well, here's an alternative: the Catalyst wireless earbuds. These are designed to solve a number of problems that keep consumers away from wireless earbuds in the first place, with improved sound, wearability and battery life.

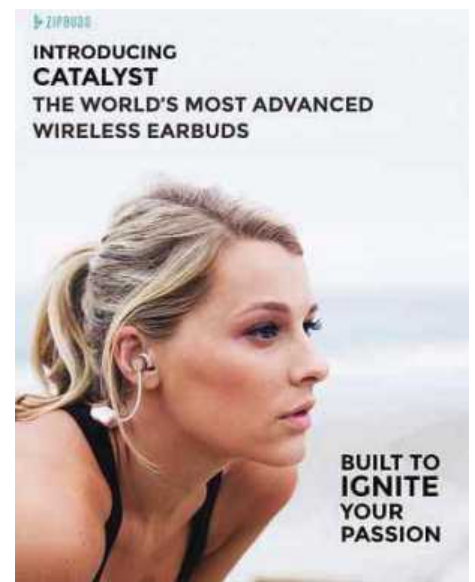
Features include memory foam ear tips, sweat/rain proof casing, a noise-isolating microphone, volume adjusters with haptic feedback, an adjustable tightening strap to keep them in place and a call-answer button. The hybrid driver system means each ear essentially contains two speakers to give a wide dynamic range. The package itself comes with the earbuds, six pairs of in-ear stabilisers of varying sizes and six pairs of interchangeable eartips in varying sizes, for a total of 144 combinations. One charge lasts up to six hours, and you can

magnetically attach extra batteries to raise that to 15 hours!

At time of writing, you can still get the earbuds, a charge clip, charge cable and case for \$80 off the retail price – just \$169 (£127). If you miss that, the full Kickstarter price is still only \$189 (£142) – almost 25% off! The earbuds will ship in January 2017, and we think they're going to be worth the wait.

URL: kck.st/2cyWQkB

Funding Ends: Friday, 4th November 2016



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App Of The Week

Pixel Art Studio

David Hayward gets all arty this week

Pixel art has become a popular theme across the internet in the last decade, thanks to the revival of all things retro. Nowadays, you don't necessarily need to be a talented artist in order to come up with something quite stunning. Obviously a modern pixel art app is a long way from the pages of graph paper we used to draw out Spectrum pixels on, but still, finding one that contains all the necessary elements as well as being easy to use can be a bit of a chore.

We're not pixel artists, not by a long shot, so when we had the need to come up with some pixel art for a project we inevitably turned to what the internet had to offer. Surprisingly, we found exactly what we wanted from a most unlikely source: The Windows 10 App Store.

The Windows 10 Store isn't somewhere we frequently hang out if we're being brutally honest here. Most of the stuff in there we've come across is seriously limited, in one form or another, or doesn't really interest us in the slightest. Since we use it on a desktop PC, there are usually many more – and ultimately better –

programs available outside the Windows Store. However, on this occasion, it came up trumps.

Pixel Art Studio

The app in question, Pixel Art Studio, by developer Igor Gritsenko, is a fairly basic looking program. Under its surface, however, are a wealth of useful and powerful features.

The app itself is free – and available for Windows 10 version 10240.0 or higher, 32 or 64-bit systems. Once installed, you're introduced to a blank canvas, with controls surrounding the centre-positioned area where your artwork will evolve. Along the top is the main toolbar – which offers you undo, redo, clear, copy, cut and paste, as well as preview and zoom controls. There are three more icons included in the main toolbar: Tools, Animation, and More, with each hosting a number of sub-toolbars that will allow you to better define the image you're currently working on.

The animation feature allows you to, obviously, create a pixel animated graphic, and save it as an animated GIF or a

Features At A Glance

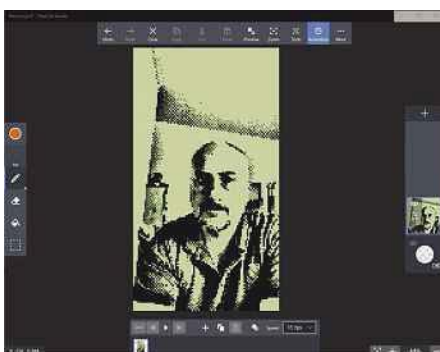
- Easy to use and powerful user interface
- Standard instruments for graphic editing (freehand drawing, flood fill, erase, etc.)
- Tiled and sprite preview mode
- Import/export to PNG
- Different brushes types
- Brush opacity and size settings
- Pen pressure support for some of the available brushes
- Special effects on layers (shadow, colour overlay)

frame by frame PNG sequence. The More section then offers you the ability to load, save, save as, or export to a particular image format of your choice, along with being able to load up example artwork created by the community.

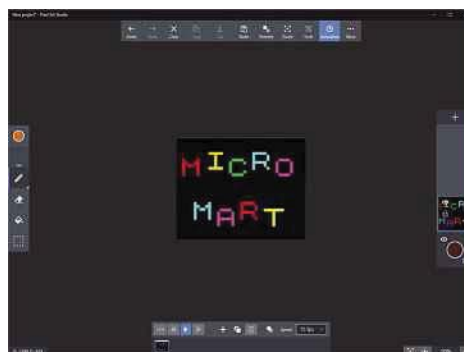
Among the various features Pixel Art Studio allows you to freehand draw, flood fill, add layers, add special effects to layers, select various brushes, select a custom canvas size, and even include pen pressure support.

Conclusion

While our graphical and artistic expertise is somewhat limited, even we managed to produce something with the effect we were looking for in the end, and it was reasonably quickly done too. So while Pixel Art Studio may not be as complex or as capable as a lot of other art package examples you'll come across, it's free and for a quick blast at creating something interesting, it's certainly worth the meagre download. Basically, if we can do it, so can you! [mm](#)



▲ Pixel Art Studio is an impressive app, considering it's free



▲ The end results can be quite splendid, if you're a better artist than us

Logging Off

Everyday Google gets thousands of Digital Millennium Copyright Act (DMCA) requests to remove videos from YouTube and links to content that's protected by copyright. Nothing new there, people often post bits of films and other stuff that they really shouldn't. What you might not realise is that the content owners don't generally issue these DMCA complaints themselves; they have others to do the dirty work for them – companies like Vobile Inc.

That's the company that protects Warner Bros. from the bad guys, though it appears not from its own stupidity in hiring it. I say that because Google recently got a bunch of requests from Vobile for some websites that it was pretty sure were infringing Warner's IP: one was www.warnerbros.com/dark-knight, and the other was www.warnerbros.com/matrix.

The clue to the problem is in the domain names: yes, they are both part of Warner's own site. Yet, they have been deemed by Vobile Inc. to have infringed copyright. It didn't stop there. It also requested that Google removes links to Warner's movies on IMDB, Amazon, and Sky – none of which were actually infringing. Indeed, two of these places have contractual links to Warner's that any such move could potentially damage.

The obvious conclusion might be that Vobile Inc. employs a vast army of unpaid interns who don't really care if they get DMCA requests right or wrong, and mistakes happen. Except, they seem to happen remarkably often with Warner Bros., which has previously been subject to legal action for its alleged flagrant abuse the DMCA process.

Other than the idiocy of a major company, Vobile's *faux pas* does highlight a problem with the DMCA: while penalties for not removing copyrighted content can be substantial, there isn't one for falsely requesting removal. Indeed, often you'll find that a company requesting something be removed doesn't actually own the copyright.

Here's a scenario: record label X has a huge YouTube hit with its latest musical artist, and record label Y wants to launch a new band with its own promo. Y issues a false takedown notice against label X's promo, gets it removed so that their artist can trend more easily. By the time the 'mistake' is noticed the damage is done.

This is going on all the time, on differing scales. Alongside that, you've got companies claiming copyright on things that went into the

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public domain decades ago, that they never owned, or just because they don't like the similarities between it and their own product.

The Warners legal action I mentioned earlier didn't ever actually go to court because – shrewdly – it settled out of court, thus avoiding a judge making precedent as to the reasonable cost of erroneous DMCA requests. This latest source of ridicule just underlines the need for reform in this area. Because, while companies should be able to use all reasonable means to protect things they do own, falsely claiming ownership is essentially fraud.

What should instigate a system where, when a company issues a spurious notice, it pays for the bandwidth of that website or YouTube video for the next five years. There needs to be some guard against abusing the system, because that abuse's fallout is landing in someone's inbox every day.

In the meantime, Warner Bros. may have some new films coming out, though where you might find information about them online is probably secret.

Mark Dickavance

LAST WEEK'S CROSSWORD

Across: 7 Take A Back Seat, 8 Phrase, 9 Re-Echo, 10 Imprest, 12 Steam, 14 Snake, 16 Typeset, 19 Aminet, 20 LMHOST, 22 Czech Republic.

Down: 1 Cash, 2 Repair, 3 Obverse, 4 SCORM, 5 Assert, 6 Dashlane, 11 Minimize, 13 Cyclops, 15 Kinect, 17 Ephebe, 18 Start, 21 Skip.

DISCLAIMER

The views expressed by contributors are not necessarily those of the publishers. Every care is taken to ensure that the contents of the magazine are accurate but the publishers cannot accept responsibility for errors. While reasonable care is taken when accepting advertisements, the publishers cannot accept any responsibility for any resulting unsatisfactory transactions. This week has ushered in an air of relative calm in the world of Micro Mart. As the nights begin to get longer and the drive to venture out abates in inverse proportion, you notice how the team gradually falls back into a comfortable groove of evening tinkering – allied to daytimes where we try to keep up the workrate up, rather than Googling [other search engines

are available; we just don't use them] for help with our latest project or surfing around looking for our next project or chatting incessantly about our latest project/gaming obsession/computer woe/cats. If only this muggy weather would abate somewhat, we'd all be pretty much in our preferred state. Basically, when the pumpkin spice comes out, so do we... We don't drink it, because we're British, and that's simply not done, but we do appreciate its arrival. One thing we will be sad to see the back of, however, is the Olympics and Paralympics. It's basically made this summer bearable, even uplifting at times, and has thankfully been a splash of colour in a rubbish year. Even that doesn't seem to be able to dodge becoming a hacking story, though. Sigh.

THIS WEEK'S CROSSWORD

Across

7 A set of figures indicating the relative price of shares on the New York Stock Exchange, based on the average price of selected stocks. (3,5,5)

8 In Greek mythology a beautiful princess loved by Cupid who visited her at night and told her she must not try to see him. (6)

9 A quick and penetrating intelligence. (6)

10 Dominance through threat of punishment and violence. (7)

12 A formation of plants and animals that have common characteristics due to similar climates and can be found over a range of continents. (5)

14 A single instance of periodical literature such as a journal, magazine, or newspaper. (5)

16 People who just can't stop talking about other peoples business. (7)

19 A workplace where metal is worked by heating and hammering. (6)

20 A function whose being even or odd provides a check on a set of binary values. (6)

22 The order of elements in Mendeleyev's table of the elements. (6,7)

Down

1 In gaming a particularly tough enemy, usually appearing at the end of a section or level. (4)

2 Material that is forced or thrown out, especially as a result of volcanic eruption, meteoritic impact, or stellar explosion. (6)

3 An electrical device that sends or receives radio or television signals. (7)

4 A powerful agent used particularly in the control of riots. (2,3)

5 Ring-shaped objects. (6)

6 In gaming a term used to describe side-scrolling 2D fighters such as Final Fight and Streets of Rage. (4,2,2)

11 A national park in the Sierra Nevada in central California. (8)

13 Affectedly grand, solemn, or self-important. (7)

15 In or of the month preceding the present one. (6)

17 A person who copies out documents, especially one employed to do this before printing was invented. (6)

18 The relation that exists when things occur at the same time. (5)

21 Shape by rotating on a lathe, cutting device or wheel. (4)



In Next Week's Micro Mart*

- Coding with the BBC Micro Bit
- World record breaking technology
- How to record anything from the internet
- Why brands need to worry about Facebook
- Plus the usual mix of news, features, reviews and advice



* May be subject to change



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